Consolidated Profile of
VoICE Consortium Exhibitors
4G 5G Private Enterprise Networks

Brief Profile of VoICE CONSORTIUM Exhibitors

Brief Profile of VoICE and 23 Telecom Companies under VoICE Consortium are given below.

1	VoICE	13	Cientra
2	Coral Telecom	14	IDRBT
3	Dyotis/ Echelon	15	Infinity Labs
4	Kenstel	16	Finaara
5	Lekha Wireless	17	Innogle
6	Sparsh (Samriddhi)	18	NxtGen
7	Niral Networks	19	OptimusLogic
8	Nivetti Systems	20	Rosmerta
9	Resonous	21	Sensorise
10	Signalchip	22	Menthosa
11	Signaltron	23	Nav Wireless Technologies
12	BigCat Wireless	24	Skytale Alpha

PRODUCT LAUNCH from VoICE Consortium Companies during IMC2022 (October 1 to 4, 2022)	
VOICE CONSORTIUM	
S. No.	**VoICE Company**	**Launch of Product/ Solution**

S. No.	VoICE Company	Launch of Product/ Solution
1	**Cientra Techsolution Pvt Ltd**	**Product will be part of demonstration under DCIS (DoT) Scheme covering Railways, PowerGrid and Jalshakti**
2	**Coral Telecom**	**JSS55555 compliant rugged converged multi-protocol network terminal**
3	**Innogle Technologies Pvt Ltd**	**5G enabled Kadalcompass KC (Deep and coastal device) with underwater device and doctors connect app, life safety and track and traceable watch.**
4	**Kenstel**	**FWA Device**
5	**Lekha Wireless Solutions Pvt Ltd**	**Launch of 4G Network service at Marashettana Halli and Bidare Gram Panchayats providing rural broadband connectivity. Project funded by USOF DOT.**
6	**Lekha Wireless Solutions Pvt Ltd**	**Lekha's Vyapi Network in a Box.**
	Lekha Wireless Solutions Pvt Ltd	**Launch of Lekha's Marut N1 band RU compliant to ORAN 7-2X. Product will be part of the live demonstration. R&D supported by DCIS grant.**
7	**Niral Networks**	**Launch of Niral Private 5G Core.**
	Niral Networks	**Launch of Niral Multi-site Private 5G Management.**
8	**Nivetti**	**5G Edge Computing platform and Cyber Security Platform**
9	**NxtGen Datacenter and Cloud Technologies**	**Private 5G network for captive setups: Data Center**

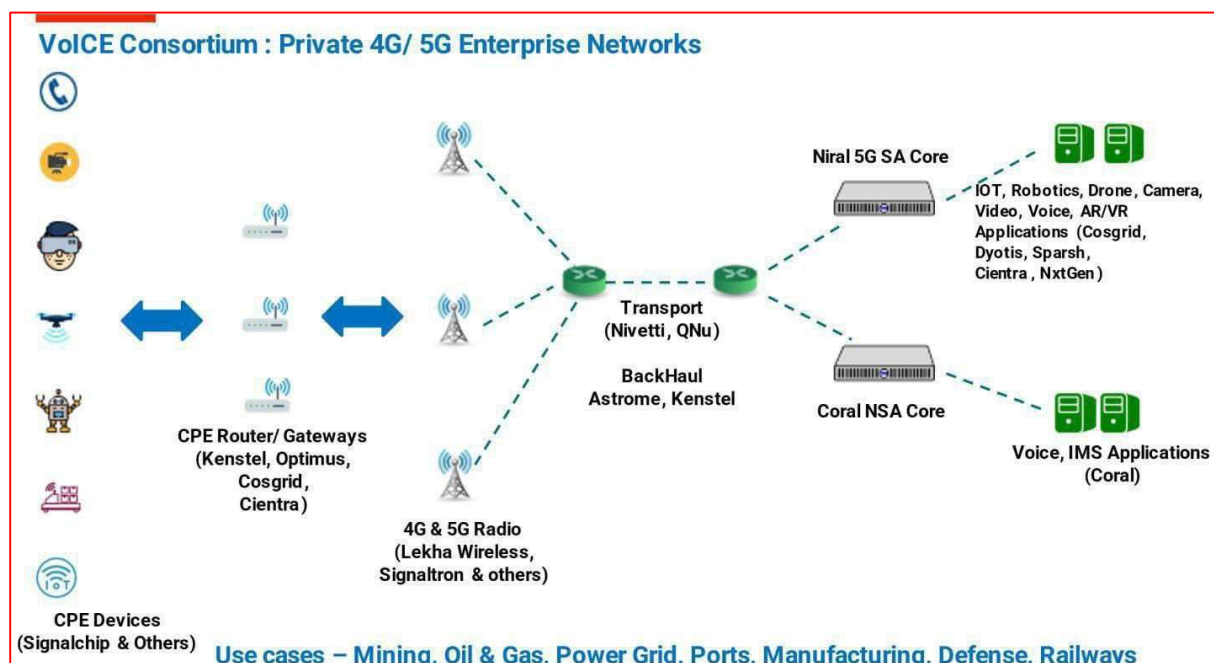| 10	OptimusLogic Systems India Private Limited	Optimus Rhino 5G : India's 1st homegrown 5G global mobile platform, with design-led ownership supporting multiple models in 5G in mm Wave and sub-6Ghz in all Indian supported bands in 2023.
11	Resonous Technologies Pvt Ltd	5G Standalone Core Network
12	Samriddhi Automation Pvt. Ltd- Sparsh CCTV	5G Camera Launch
13	Sensorise	QoSec - data encryption solutions for secure M2M communications
	Sensorise	Real-time tracking and monitoring of Public Vehicles (Women & Passenger Safety)
	Sensorise	Smart Grid, Disscoms
14	Signalchip Innovations Pvt Ltd	Launch of 4G Network service at Kathriguppe and Hirekattigenahalli Gram Panchayats providing rural broadband connectivity. Project funded by USOF DOT.
	Signalchip Innovations Pvt Ltd	First live 5G call on an Indian Chipset
15	Signaltron Systems Pvt Ltd	First live 5G call on an Indian Chipset
	Signaltron Systems Pvt Ltd	Launch of 4G Network service at Kathriguppe and Hirekattigenahalli Gram Panchayats providing rural broadband connectivity. Project funded by USOF DOT.
16	Finaara	AVRM PRO (Machine like ATM) & Monexsoft (Software tested with one paid clients)
17	BigCat Wireless Pvt Ltd	LTE-R Band 28 eNB / Network in a Box : JSS 55555 compliant (Mil Grade / Outdoor Deployment under all weather conditions) Live Demo
	BigCat Wireless Pvt Ltd	Wireless Channel Recorder Proto Demonstration (DCIS Grant)
18	Infinity Labs	InfiBharat Encryption Launch
19	Scytale Alpha	Quantum Secure Messenger

1. VoICE

VoICE (Voice of Indian Communication Technology Enterprises) represents a Society having members from Indian registered companies with domestic design led solutions covering 5G, 4G, IoT/ M2M and many new innovative based on India IPR from Start- ups and others.

Why VoICE

a. First and only society for Indian Deep tech and communication technology company.

b. Single platform for end-to-end telecommunication eco-system covering all aspects of the network.

c. Funding Research and Development and Pilot Network for different use cases

d. Society has member companies with entrepreneurs, technology experts with vast industry experiences who share the spirit of prime minister's AtmaNirbhar Bharat vision.

e. Members ready to work with domain experts to create telecom network specific to use-case for example Railways, mining etc.

f. Consultation for decision making in all aspects of policy towards R&D, startups, nurturing new ideas, piloting products, and adopting new trends.
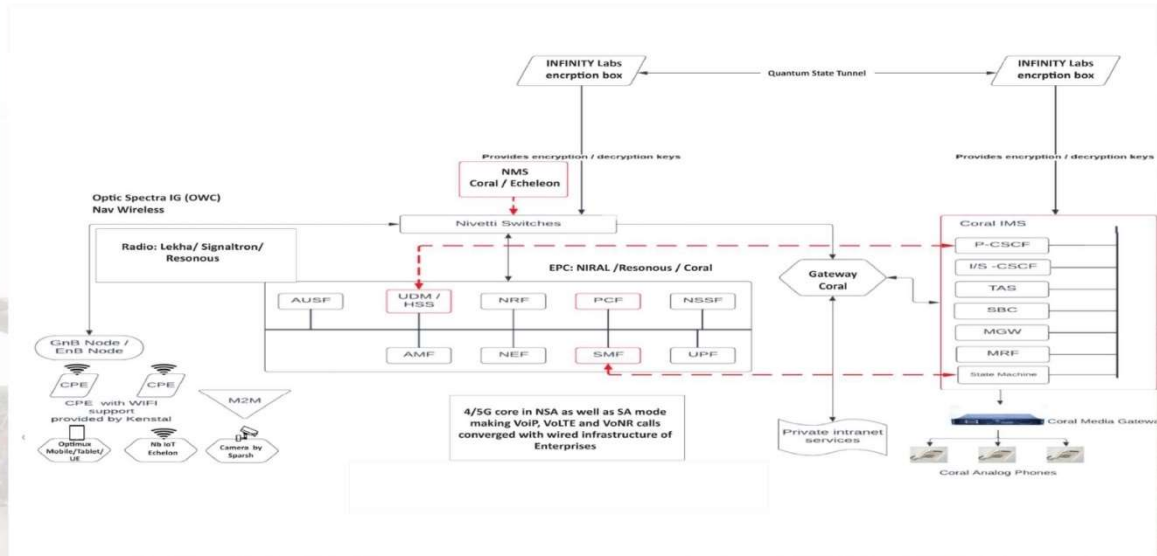
Consortium Based Solutions on 5G Enterprise Networks

One typical Consortium with equipment/ solutions coming from multiple players are possible for setting up Private 5G Enterprise Networks is shown in Figure below.

ENTERPRISE CONVERGED NETWORK

Technology	5G NW	4G NW
Live Demo	Converged cellular and wired communication network. "Network in a Box" seamless with Army IMS	Video Streaming, Mission Critical, PTT, Video broadcast, VoLTE, IOT, Unified Communication. NMS
Semiconductor	5G RU Chip, SDR Chip	4G Baseband, Integrated 4G BB+RF
RAN Products	Outdoor Macro RU, Indoor Small cell RU, CU , DU and gNodeB, Network In a Box	Outdoor Macro eNodeB, Femto Cell, Network In Box
Core	Enterprise Core, Compact Core, Disaggregated Cloud Native	Enterprise Core, Telco Grade

INDIGENOUS INDUSTRY MEMBERS/ TECHNOLOGY Providers in IMC VoICE Consortium

(There are some more VoICE Members who are not in VoICE Consortium as exhibitors)

1.	4G/ 5G Core	Lekha Wireless, Resonous, Niral Networks, Coral Telecom
2.	4G/ 5G Radio	Lekha Wireless/ Signaltron/ Resonous
3.	Network in a Box	BigCat Wireless, Lekha Wireless, Resonous, Signaltron
4.	Chipsets 5G/ 4G/ 3G	Signalchip
5.	Data Centre/ IOT	NexGen Data Centre, Cientra IOT Aggregation
6.	UE, CPE	Kenstal FWA, OptimusLogic, Tablet Phones
7.	Backhaul	Kenstel, Nav Wireless
8.	NMS	Coral Telecom, Echelon
9.	IMS	Coral Telecom
10.	Switches	Nivetti Systems
11.	Encryption	Infinity labs, Scytale Alpha
12.	E SIMS	Sensorise
13.	Camera	Sparsh (Samriddhi)
14.	Applications (Marine)	Innogle
15.	Applications (Banking & Finance)	IDRBT, Finaara

RAILWAYS/ ARMY/ MINING AUTOMOBILE CASES

RAILWAYS

CONVERGED NETWORKS FOR DEFENCE FIELD UNIT

Private 5G networks

Enterprise communication, in future will require reliable, high performance, high bandwidth & low latency 5G networks that are devise, media and protocol agnostic. Converged core will connect mobiles as well as wired devices offering common management and provisioning interface. These private 5G networks, would converge Voice, Data, IOT & M2M communication within the enterprise and will open a plethora of applications to address diverse customer requirements. Private networks are already being deployed in a wide range of industries for indoor and outdoor applications but private 5G networks will accelerate the process as every industry including mining, ports, automotive, durable goods and chemicals would need them for their digital transformation that would include IOT & M2M applications. Voice and data communication may be peripheral use cases

"Voice", as a platform has taken the initiative to integrate various subsystems developed by our Startups and SMEs to provide a complete end to end system that will open opportunities in Utility companies, Railways, Mines, Oil and Gas as well as Defense applications. Collectively, this would be a large market that can resurrect domestic telecom design & manufacturing industry.

Use cases

1. Campus deployment as an extension of the enterprise PABX where Private 5G can support mobility requirements within large campus, of an integrated factory with residential blocks, Hotels, Hospital & institutions where some staff is on the move. Offshore drilling rigs, construction and mining sites are potential customers. Once high-speed low latency network is established, it would double up for IOT & M2M applications for plant monitoring maintenance and predictive alerts on impending fault

2. Ships / Islands and Forest guards need quick deployment of complete networks that may be backhauled on Satellite / Optical Wireless/ UHF or VHF where such 5G based private networks would be an ideal choice for basic communication.

3. Submarines would need it for communication as well as predictive fault alerts by use of appropriate sensors and AI algorithms. Time-Sensitive Networking (TSN) and real-time-based decision making is rapidly finding role in several mission- critical applications across many industries, including manufacturing, oil and gas, aerospace, and transportation that will require such 5G networks.

4. Battery powered, Tactical Deployments mounted on vehicle in a compact single box for quick deployment of wired and RF Optical wireless service could be an ideal communication box for Disaster management teams or for defense setups. These could be housed in jeeps or ships with onboard gensets and can cover 5 to 7 Kms radius. Deployment of half a Dozen such mobile communication systems can cover a larger area seamlessly communicating between each other as part of Tactical deployment. UN peacekeeping forces or troops stationed in any part of the word can be customers for such applications. IOT devices tightly intertwined on the 5G network will help identify, locate threats, and protect critical assets as well as enhanced predictive preventive maintenance of critical equipment and services.

5. Utility companies, Railway stations, Airports & Accident sites will need these private 5G network for support on all legacy communication including communication on Quad cable, E&M, BWT & even magneto trunks. Railway accident relief trains can provide immediate voice and data communication that will work seamlessly with their laid- out communication system. Railways could use it for specialized Train control and communication system (TCCS).

6. It can be an effective replacement for imported Tetra based communication systems with 5G based high bandwidth low latency communication. Metro projects, Airports, Disaster management teams will find them cost effective and far more efficient. PTT and broadcast communication modes for the system shall address these requirements.

7. Disaster Management is expected to cater to emergency services & rapid deployment of mobile network at sites where existing GSM network is destroyed due to natural calamity such as hurricane & earthquake. These private networks can quickly set up reliable communication facilities that can be used by all agencies working on the site viz NGO, Red Cross, Paramilitary, Army, State departments, Fire service etc. Security agencies including Police & National Security groups will find many applications to extend emergency services during natural disasters or man- made crisis like terror strikes where need of the hour would be to provide voice, video text and high-speed low latency data services.

8. Construction sites & mining sites in far flung areas with no or limited existing telecom networks could deploy these private networks to cater for all type of reliable high-speed communication needs within the private campus. Oil rigs, Oil wells and large construction sites or mining areas could be ideal customer for such private network deployments. They would need high speed low latency 5G networks to use IOT devices for automated / robotic or remote managed applications that are sensitive & mission critical.

9. In-building solution to enhance mobile coverage in the building thereby releasing load on the macro BTS network, local switching and intelligence will provide enhanced coverage & additional subscriber density. This would also help effective use of scarce spectrum as each private cell would reuse the same spectrum band.

10. Greenfield deployments in Rural areas by providing cost effective & quick deployment methodology that can help local youth to manage and run these networks on commercial basis. This will create jobs and entrepreneurs who would ensure upkeep and maintenance at remote locations. These private networks can also be used for temporary deployment in a Games village or for a temporary holiday camp over a few kilometers that can be powered from solar energy.

11. **InternationalDeployments**
   VoICE team members have excellent competencies to implement 4G/ 5G Private Enterprise Networks as per the requirements of any country or organization.

12. **InternationalTrainingCentres**
   VoICE is submitting some Pilot Projects on training covering 5 countries in Africa, 1 in Arab Region and 4 in ASEAN countries. The Project shall include Projects with Live 4G/ 5G Private Enterprise Network like the one represented in Figure 1 with possible support from Indian Government and foreign partners. Each Centre can provide support to a few neighboring countries as well.

2. CORAL TELECOM

Coral Telecom Limited is a leading design and manufacturing company that provides converged "enterprise communication solutions" with focus on applications for Railways, Metro, Mines, Défense and other similar private communication networks. Converged platforms will provide wired as well as wireless subscribers for enterprise customers as both type of networks will always co-exist in real life. IMS switching core will seamlessly provide call control function for legacy TDM devices as well as modern day IP desk phones as well as to mobile customers on 4/5 G handsets.

Primarily engaged in design, development & re-engineering of IMS based, Unified Communication solutions that handle voice, video, and data requirements of a modern enterprise. Specialized software applications have been designed to provide integrated communication solutions with Paging, Video conferencing and Despatcher applications that find use on Railways, Metro Projects, and Smart city applications.

Solutions includes converged 4/5 G core that provides seamless communication with LTE / 5G based radio networks such as to facilitate private enterprise communication across wired as well as wireless devices. We support mission critical and MCX based floor control services to facilitate PTT (push to talk) features for audio and video broadcast, so critical for applications i n Utility companies, Police and Paramilitary forces. Solution supports Autonomous vehicles, Robotic arms, IOT and M2M applications for Mines, Submarines, Oil rigs and can cater to needs of Industry 4.0 in general.

Common NMS facilitates simple user-friendly management and configuration of all network elements. Ability of our solution to support plug and play function for Gateways, Wired phones, Mobile phones, Cameras, IOT devices with centralised control and common alerts makes it a preferred choice of users.

Coral has designed and manufactures associated embedded hardware or media gateways to provide seamless inter- operability with legacy protocols like FXS, FXO, PRI, GSM, E&M etc. with emphasis on converged multi-service, multi- protocol access gateways that can work as part of an IP Multimedia subsystem yet capable of standalone existence.

Coral's specialization lies in the fact that it has total control on technology thus offering a unique ability for customization. Its diverse experience in the fields of telecommunication, convergence technology, software, hardware, application development and project management, places it as an ideal provider of solutions across the value chain.

Coral is prepared to forge strong ties with telecom design companies in friendly countries by transfer of technology and knowledge for setting up converged 4 / 5 G networks for enterprise customers. In true spirit of friendship, India will commit to invest in capability and capacity building of friendly countries so that they also walk on the path of "Self reliance" that our Prime Minister has charted for us.

Coral can conduct projects that will enhance knowledge base of telecom professionals involved in design creation and building of 4 / 5 G mobile telecommunication networks in ASEAN & African countries. Trainees shall have better understanding and knowledge of each module of such networks and they would be able to integrate certain modules available locally or from open source communities. Trainees will get opportunity for hands on training on these modules and they will set up live captive networks at identified locations.

Enterprise Communication – seamless working with
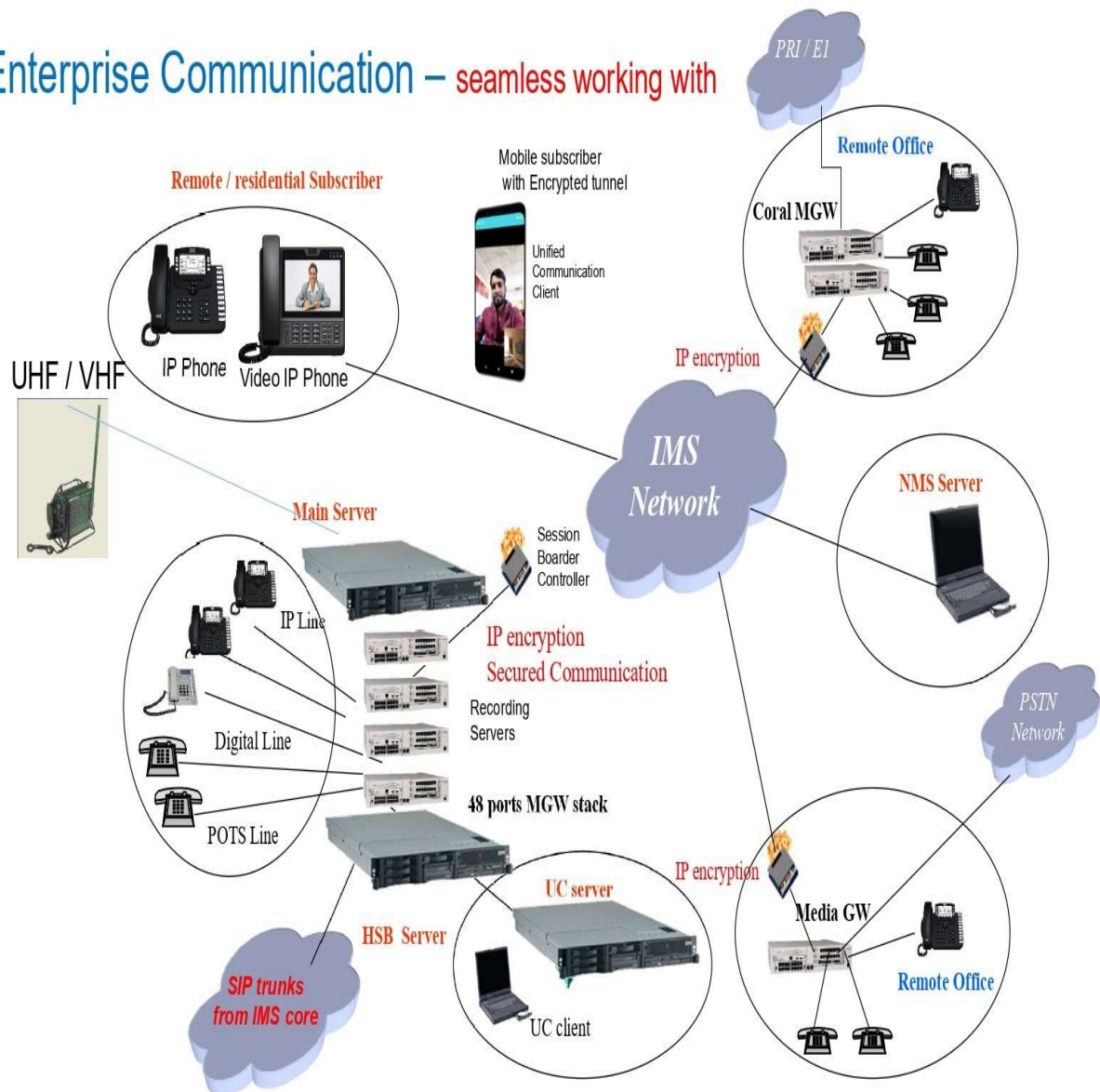
Elements of the Converged enterprise network

Radio Access Network : 4G & , 5G radios (RAN). These could be integrated radio which are cost effective or could be as per open RAN architecture (CU DU & RU) they could be Base band unit with four radio heads connected over OFC.

Antenna and mounting structure : RAN would require appropriate antenna and support structure to radiate.

CORE EPC cores could be NSA or SA core for 4G and 5G communication respectively. These would provide mobility across various radios (RANs).

Application and voice Switching IP based multimedia Switching or IMS, Soft Switches that would support voice switching or call control features and functions. MCX server and Floor control servers will support mission critical functions like PTT Video PTT voice and Video Broadcast. All voice features of the network including Billing, Voice recording features are supported. Redundancy duplication and path replacement features can be supported.

Network Management System (NMS) to monitor health of each of the network devices in each testbed.

Media gateways for converting IP to conventional TDM protocols so that a converged communication network can be set up for captive communication in a campus.

Backhaul radio to interconnect each of these radio networks with the central Core.

CPE Devices : Various CPE devices will be supported on these private networks that would include Mobile phones, Camera of different varieties (Bullet camera,

Body strap Camera and plain outdoor camera) with capabilities to operate on 4 / 5 G network as well on WiFi backhaul.

Several IOT & M2M applications can be supplied with Lidar based communication and remote controls that will have thermal & seismic sensors that can be controlled and managed on 4/5 G networks.

Contact Person:	Mr. Anil Nagpal	Mr. Rahul Gupta
Designation:	Director (Operations)	AGM
Telephone No:	9891499302	9990803109
Email ID:	anilnagpal@coraltele.com	rahul.gupta@coraltele.com
Landline No:	0120 -2595 815	
Address:	Coral Telecom Limited, E-2, Sector- 63, Noida, UP - 201 301	
Web:	www.coraltele.com	

3. ECHELON EDGE PVT LTD

Brief Company Profile: -

At Echelon Edge, we stay true to our name and offer products and solutions that can help in transforming the way businesses work. Our primary aim is to offer the customers with powerful yet affordable services that can resolve various underlying business issues. Also, after spending more than 10 years in the industry, we have gained enough knowledge about what the customers want. By utilizing that knowledge, we have created some of the best products in the field of telecom, government, and enterprise.

Products & Services

1. Telco BSS
2. NMS/EMS
3. IoT Platform
4. 5G Core
5. Big Data Analytics Platform
6. PIS

Contact Person: Mr. Sumit Sharma
Designation: Presales - Director
Telephone No: +91 9876694011
Email ID: sumit.sharma@echelonedge.com
Web: www.echelonedge.com

SOLUTION PORTFOLIO

Products designed for **digitizing the 5G Era**

Percipient NMS is an **all-in-one IOT & Network Device Management platform** that caters to the Enterprise Management and Centralized Control, Monitoring & Configuration. The solution is FCAPS based along with Helpdesk Ticketing & SLA Management. The solution is highly scalable and robust to cater to ever-growing demands of Heterogeneous Devices and Network in Telecom and Large Enterprise.

Key Features

- Powerful visualization
- Scalability
- Automation
- Single Pane of Glass View
- ITSM
- Flexible configuration
- Heterogenous NW, Devices, 5G & IOT sensors

Benefits

- We have a unique solution that supports monitoring and complete management of most of the industry devices and use cases.
- Single Pane of Glass view that provides centralized access and end-to-end network management.
- Multi-Tenancy Support & Geo-Location Tagging.
- Single solution that caters to heterogeneous devices, multiple industries and use cases to provide better agility and time-to-market.
- The solution will provide in-built ansible integration for automation of network & infrastructure.
- The solution will support multiple protocols, eg. MQTT, Netconf etc. for 5G & Telecom device integration.

Teralytix Edge is a scalable, cost-effective, centralized repository, data processing and warehouse solution designed for business agility, regulatory requirements, & provides an intergrated source of information.

Key Features

- AI/ML driven data & insights
- Enhanced performance with 3 tier architecture
- Supports integration with multiple data sources
- Robust and secure platform
- Highly scalable solution with parallelism
- Customized reporting and visualization

Benefits

- Data collection from multiple sources and processing huge data volumes with flexibility.
- Visualization, production reporting, and consumption by other systems for advanced Analytics and Performance Management.
- Powerful performance that is several times faster than the legacy system with parallel processing and automatic portioning.

Our provisioning system is built for complex telco grade systems. Will also have cloud native BSS offering in **SaaS model** that enables extremely agile method of delivery , faster time to market and serving multiple enterprise customers from a single instance logical data integrity and protection is maintained in order for avoid one enterprise able to access the data from the other enterprise.

Key Features

- Ready-to-use business operating system
- Monetize the business at your pace
- Automate your monetization with the SaaS model

Benefits

- Innovate & react faster to market needs.
- Remove vendor lock-in with a platform built entirely on open-source.
- Enable flexible growth models, simply operations, & facilitate onboarding & settling with cross-industry partners.
- Transform with a composable architecture & dynamic microservice scaling.
- Minimize the total cost of ownership with multi-tenancy architecture.
- Empower marketing to launch customer journeys quickly.
- Will have support for latest technologies like 5G , IoT etc.

Our Certifications

CMMIDEV/3   MAKE IN INDIA   GeM   ISO CERTIFIED COMPANY

ECHELON EDGE
Leading through Innovation

GET IN TOUCH

sales@echelonedge.com | marketing@echelonedge.com

www.echelonedge.com

4. KENSTEL

WIRELINE EPON/ GPON/ XPON
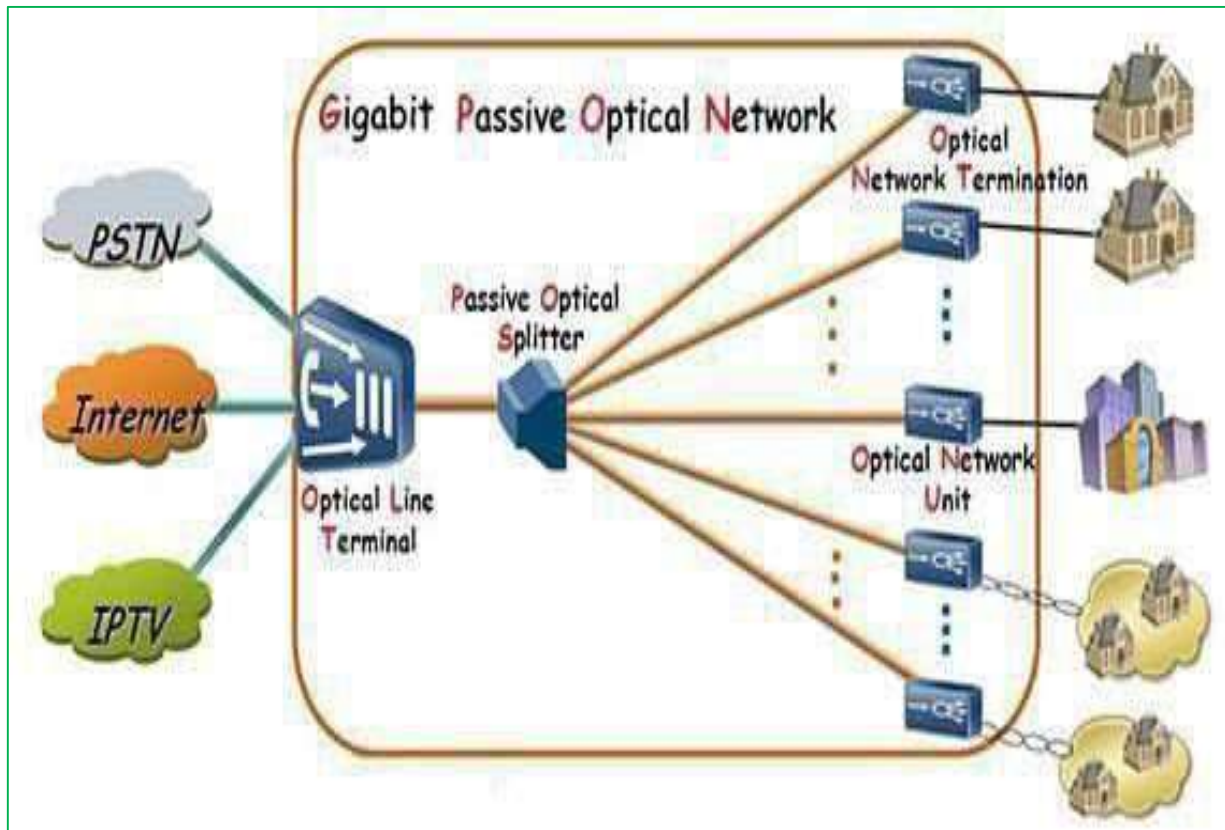
WIRELESS
Wireless Access Points, CPE (Indoor & Outdoor) 5G LTE CPE WiFi Router
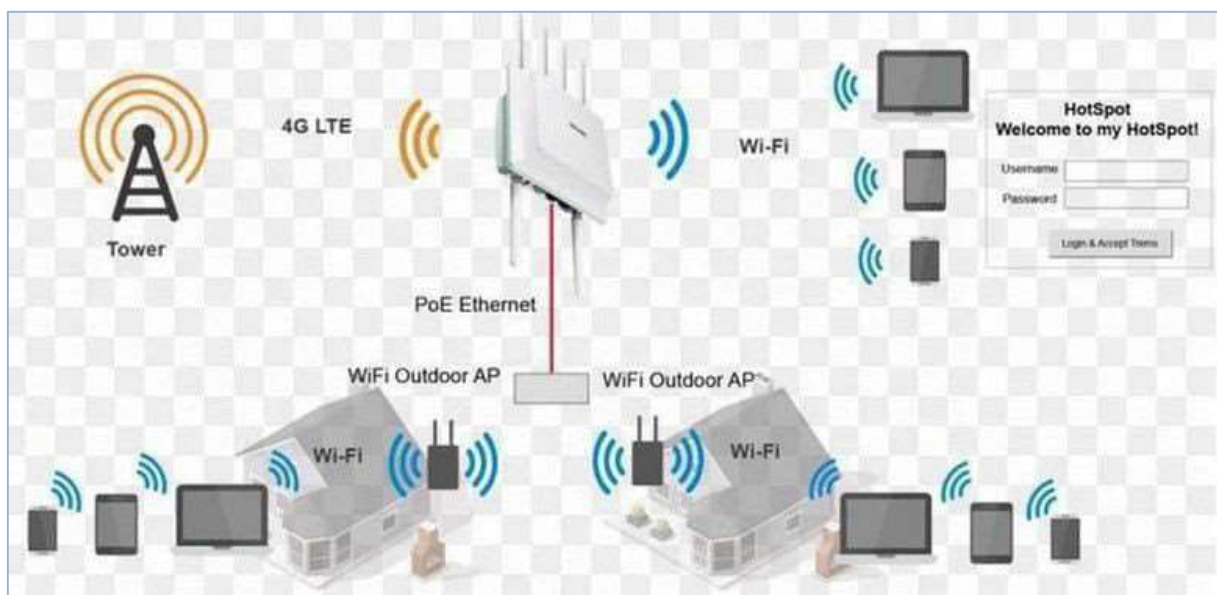
About us

- A decade of experience in designing, developing and deploying Radios for Enterprise and Telecom application.

- SDR based Wireless Data Link products for Tactical communication.

- "Lekha" means communication in Sanskrit and our focus is wireless communication.

Deep Tech company Total Ownership of SW and HW Design

LTE RAN Deployment	**5G NR RAN Development**
Deployed Industrial IOT Network	**Nextgen Radios**
Tactical Data Links Deployment	**Advanced Tactical SDRs**

Scan the QR Code for Website

Lekha

ORAN Solutions

Marut O-RU

Scan the QR Code
for more detail

Features

- 3GPP Release 15

- Front Haul Interface: ORAN 7-2x

- Antenna configuration 8T8R

- Number of Layers 8

- Bandwidth Up to 100MHz

- Duplexing TDD and FDD

- Subcarrier Spacing 15KHz, 30 KHz

- Supported RAT 5G NR

- Radio Type: Category A

- Band of Operation: N78, N71, N1, N41

O-CU & O-DU

Scan the QR Code for more detail
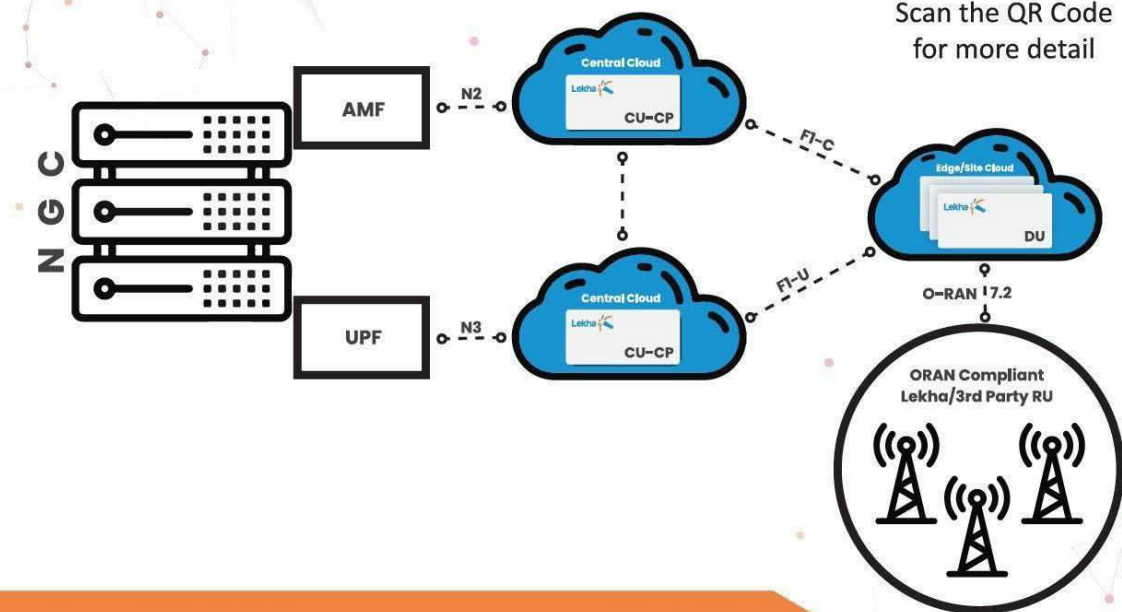
Specifications

- NR release 16 compliant

- Support for 7.2x and Split 2

- Subcarrier Spacing - 15kHZ, 30kHZ, 60kHZ

- Upto 100MHz Bandwidth – FR1

- Duplexing Mode - FDD/TDD

- Support for SA

Features

- Containerized to run on virtualized cloud native platforms

- Open-architecture

- Cost-saving and faster time-to-market

- Off-the-shelf hardware

- Multi-Vendor Interoperability

Vyapi Private 4G Network

Manpack LTE Network In Box (NIB)

Technical Specification

- MIMO Modes: 2X2, 2X4 and 4X4
- Duplexing: FDD & TDD.
- Supported Bands: B!, B3, B5, B28 & B41.
- RF Power: 1W, 10W, 20W and 40W.
- Product Config: NIB, Integrated Micro/Macro and Pico Cell.
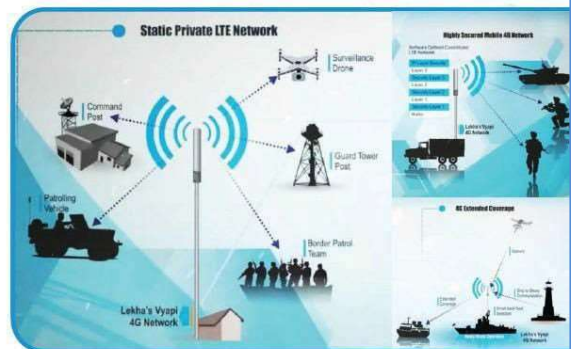
Key Features

- 4G Private Network for Armed Forces.
- Interop with COTS 4G Handsets.
- SON Networks support for easy installation and maintenance.
- Enhanced Security for Tactical Applications.
- Manpack, Vehicle Mount & Tower mount versions

Scan the QR Code for more detail
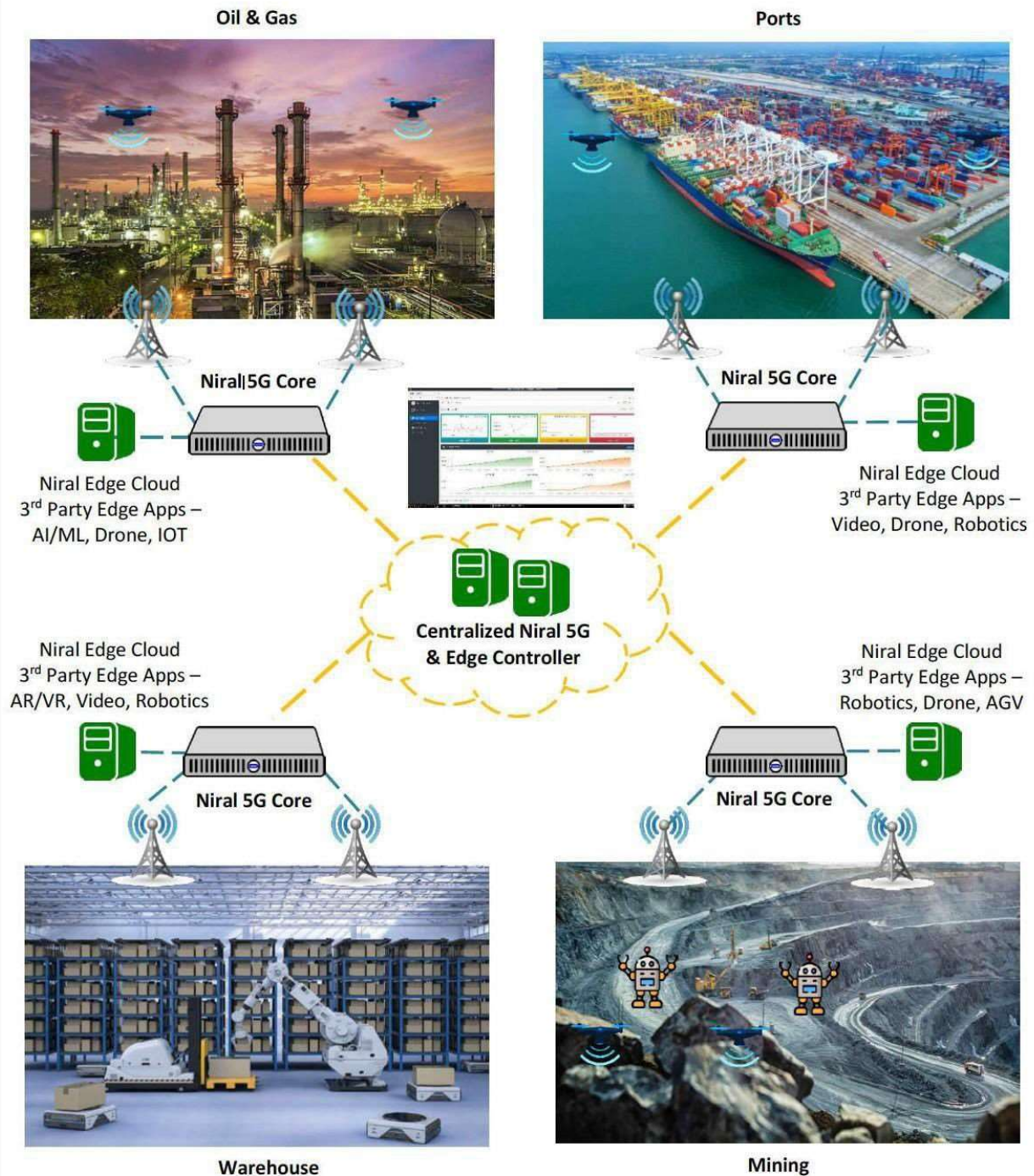
6. NIRAL NETWORKS

NIralOS Introduction

Niral Networks provide a comprehensive cloud-native 5G Core and Edge infrastructure platform for Enterprises using its open and disaggregated Network Operating System called NiralOS that can be easily integrated with COTS hardware and 5G Radio to optimize Edge applications (IOT, AR/VR, AGV, Drone, AI) and managed from a centralized dashboard without the need of any specialized IT staff.

Niral Networks is targeting the USD 517 Billion private 5G and Edge market that will shape the future of Enterprise Connectivity for emerging, high bandwidth, low latency applications with mobility, thereby redefining the way people live and work.

NiralOS Network Operating System

- **Private 5G Core** – Cloud-Native Private 5G core software for Mobility, Authentication, security, Session and Policy Management. It contains the 5G Network Functions - AMF, SMF, AUSF, DM, NRF, UPF. Niral 5G core also has a compact User Plane Function (UPF) to provide local breakout within Enterprise when integrated with TSP's centralized 5G Core.

- **Mobile Edge Cloud Platform** – Kubernetes and virtualized edge cloud infrastructure to create a mobile Edge Cloud (MEC) within Enterprise with open APIs to host 3rd party application like AR/VR, Robotics, Drones, AI/ML, Video analytics for low latency and privacy

- **Controller** – Provides centralized management, orchestration, zero touch provisioning and monitoring of multiple Private 5G networks and Mobile Edge Cloud at various sites. The controller can be hosted in the public cloud to centrally manage and monitor multiple private 5G networks.

NIralOS Specification

- Release-16 compliant 5G Core for Private 5G Deployment
- 5G Network Functions - UPF, AMF, SMF, AUSF, UDM, NRF
- Kubernetes based Cloud-Native Network Function
- DPDK + VPP based User Plane Acceleration
- Support of N1, N2, N3, N4 and Service Based Interfaces for 5G SBA
- 5G Core deployed on COTS HW of various form factor and integrated with 5G Radio
- Kubernetes and virtualized, cloud agnostic edge platform to host 3rd party applications
- Open APIs for integration of 3rd party application to Niral 5G Core and Edge platform
- Web based dashboard for Subscriber Provisioning, Configuration and Management
- Multi-tenanted Controller for 5G Core and Edge Infrastructure Management

Use cases

Manufacturing, Oil & Gas, Mining, Port, Shipyard, Power Grid, Warehouse, Disaster Management, that needs indoor/outdoor mobility over a large area with ultra-reliable, low latency and high bandwidth connectivity for AR/VR, video, drone, robotics application.

Recognitions

Niral Networks was the winner of the prestigious Aegis Graham Bell Award in the 5G Innovation Category for 2021-22. Niral Networks has been mentioned by LightCounting and GigaOm in their ICT research for Global Network Operating Systems. Niral Networks has also been recognized by DOT, NASSCOM, TIP, DSCI for their Network Operating Systems.

7. NIVETTI

NIVETTI SYSTEMS IS A SECURE NETWORKING AND CYBER SECURITY PRODUCTS & SOLUTIONS COMPANY FOCUSED ON HELPING GOVERNMENT, DEFENCE AND PRIVATE ENTERPRISES BUILD ROBUST AND SECURE DIGITAL INFRASTRUCTURE & PROTECT EXISTING INFRASTRUCTURE FROM CYBER ATTACKS.

Nivetti Systems is a Bangalore based Secure Networking and Cyber Security Indian Company which is redefining the way Network and Cyber Security products are to be built for trusted and secure communication. Nivetti has developed India's first, **fully indigenous and highly secure Network Operating System**, **Nivetti NiOS™** which powers all its Routing, Switching and Cyber Security product portfolio. Nivetti's Routing, Switching & Cyber products are deployed across Government & Defence, Telco and Private sector.

Nivetti Systems core team is having more than two decades of global experience and expertise in Networking and Cyber Security domain. With deep expertise in Hardware, Systems software, Application software, Network Security and AI/ML, Nivetti team brings in a unique 360⁰ perspective of how future digital infrastructure has to be built for Security, Programmability, Scalability and Performance.

Nivetti delivers a wide portfolio of products powered by its secure/high-assurance Network Operating System – Nivetti NiOS™. NRP Family of Aggregation Routers, powered by NiOS™, are designed as a Convergence Platform to connect various circuit/legacy technologies (e.g. T1/E1, T3/E3, STM1/4/16) and packet technologies (e.g. 1G/10G/40G Ethernet) to a Packet Core Network. With it's distributed processing architecture, NRP series routers allow a 'pay as you grow' model. Customer can deploy 1G, 10G and legacy interface speeds today and upgrade to 40G speeds by just replacing the line cards on the same chassis, enabling a migration path from legacy to high-speed interfaces. Nivetti portfolio of Ethernet Switches powers Surveillance, Telco and Critical Infrastructure.

Nivetti HawkSecure™ is a very advanced AI/ML based Network Detection and Response platform that provides Early Threat Detection, Visualisation & Cyber Forensics. Nivetti HawkSecure™. In these days of evolving Cyber Threats across Network, Compute, Application & Device layers, there is a need to ensure every packet on the Network is analyzed. Nivetti HawkSecure is deployed in some very critical and sensitive Networks of India and is protecting more than 100,000 nodes currently.

www.nivettisystems.com | contactus@nivettisystems.in | 166, 21st Main Road, 100 feet Ring Road, JP Nagar, Bangalore

8. RESONOUS

Indigenous 4G / 5G Wireless Network Solutions

Resonous technologies is a Bangalore based 4G and 5G Wireless Network Solutions Supplier with strong R&D focus for nearly 10 years, delivering cutting edge solutions with secure, reliable, and cost-effective end to end portfolio, we are specialized to serves the industry-tailored needs of Voice, Broadband Data, and IoT. Our main focused domains are Rural Telecom, Defense, and Industry 4.0 Communications.

- 4G RRU
- 5G O-RU
- 4G Network-In-A-Box
- 4G Base Station (eNodeB)
- 5G Base Station (gNodeB)

06 05 04 03 02 01

- Network Management System (NMS)
- 4G BBU
- 5G O-RU
- 5G CU/DU
- 4G Core Network (EPC+HSS+PCRF)
- 5G Cloud Native 5G SA Core NW

Deployments
- Indonesia (Asia) : *4G customized for Defense*
- Austria (Europe): *Railways, Low Power Base Station*

kapsch >>>
challenging limits

Interoperability
- Interoperable with major Industry players

Parallel WIRELESS
CISCO
TEJAS NETWORKS Future Ready. Today.
Comba KMW
COMMSCOPE now meets next
Aricent ALTRAN GROUP
Lekha Wireless Solutions
Sookhta

New Cooperation
- Ongoing cooperation's,
  - BSNL / USOF
  - Indian Railways
  - EU Commission

...Several more on the way

9. SIGNALCHIP

Signalchip is an exciting Indian fabless semiconductor company established in 2010 with the vision of building an organization of highly motivated people working on cutting edge technologies creating differentiated semiconductor products. They work on extremely innovative chips to enable high speed wireless communication standards like 4G-LTE/3G-WCDMA and 5G-NR. Signalchip's devices provide extreme performance while being optimal owing to its slim baseband and RF architectures that are designed from grounds up with modern-day high-performance systems in mind and carry no baggage of legacy systems. Signalchip have the Agumbe series of Chipsets for Radio Access networks.

Agumbe series of Chipsets for Radio Access network

Multisystem and Multiband RF Transceiver

Signalchip's RF Transceiver chips **SCRF4502** and **SCRF3402** integrates all the necessary components for 5G-NR/ 4G/ 3G/ 2G, Wi-Fi systems and a wide range of SDR applications. Integrated CPRI/JESD link support enable unique and compact RRU designs.

Complete LTE Base station in one chip

SCBM3412 is a highly optimized device built for residential and enterprise class base stations from scratch with a CPE (Customer Premise Equipment) mindset. A platform that carries no baggage of legacy systems brings together the performance and robustness of enterprise class equipment with the cost sensitivity of mass market equipment. Powerful processing engines for L1/ L2/ L3 layers of LTE Advanced systems, LTE and WCDMA have been built with innovative hardware-software partitioning and optimal analog-digital partitioning of the functionalities. SCBM3412 provides the long-awaited low-cost small cell solution with best in class performance.

High performance LTE Baseband

SCBM3404 is a highly optimized device built for enterprise and local area/macro base stations. A platform that carries no baggage of legacy systems brings together the performance and robustness of enterprise class equipment at a competitive price point. Powerful processing engines for L1/ L2/ L3 layers of LTE Advanced systems, LTE and WCDMA have been built with innovative hardware-software partitioning to support 4x4 and advanced signal processing functionality.

Single chip SoC	Baseband SoC	RF Transceivers	
LTE-LAA + WCDMA Dual Carrier 2X2 MIMO Single Chip	LTE Dual Carrier MIMO 4X4 Baseband Chip	2X2 MIMO Analog-RF Transceiver: 350MHz-6GHz with aux receiver	2X2 MIMO Analog-RF Transceiver: 350MHz-6GHz 5G-FR1 capable!
Ultra compact cost sensitive small cells	Local Area and Macro Base Stations	LTE Basestation, WiFi, SDR/Wireless Systems	5G NR, LTE Basestation, WiFi, SDR/Wireless Systems

SCRF4502: 5G-FR1 capable RF Transceiver
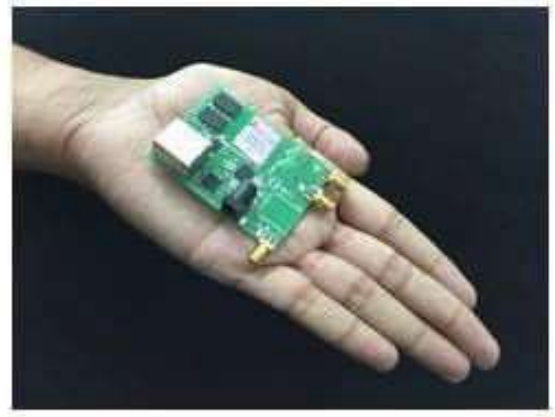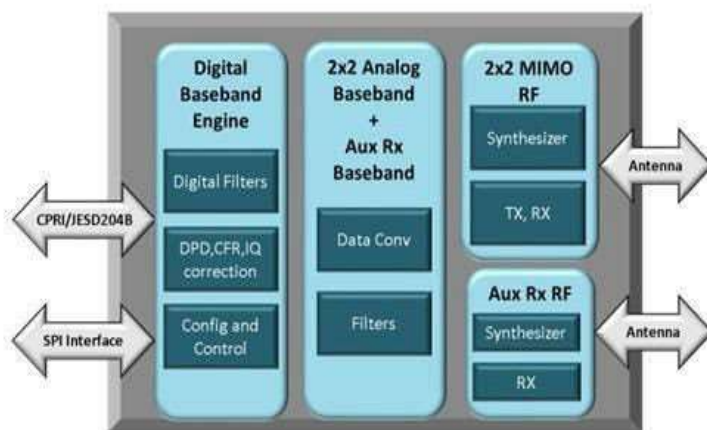
Single chip ultra-compact SoC for a Feature Rich 5G Radio Unit!

10.SIGNALTRON

Signaltron is an Indian original equipment manufacturer of Wireless communications systems established in 2019 with the vision of building complete end to end technology ownership within India in ubiquitous networking devices. Founders of Signaltron have spent many years developing solutions to some of the most complex problems in networking, computation, wired and wireless communication domains. Signaltron specializes in providing radio access network solutions for 5G, LTE, GSM and WCDMA

Focus areas of expertise:

1. Wired and wireless networking solutions : Indigenous 4G, 5G, Wifi, NavIC

2. Wireless Infrastructure

3. Enterprise and Consumer equipment

4. Secure networking

Sahyadri Series of RAN systems from Signaltron

Scalable Baseband Unit

Network in a Box

Macro eNodeB

5G/4G Radio Unit

ndoor and Outdoor Small cells

STRRU4415-160W-OD: High power High Capacity 5G RU

O- RAN Compliant with 10G eCPRI Interface

4 x 40W per antenna

Lower PHY and Beam forming O-

RAN 7.2 interface

Signaltron's Sahyadri series of Radio Access Network Equipment featuring highly integrated, compact, and versatile 5G/4G Base Stations deliver high capacity to enable ubiquitous connectivity to all. A key part of Sahyadri RAN, the STRRU4415 Remote Radio Unit is easy to install and gives the flexibility to run all functions of O- RU facilitating multiple interface splits of the macro gNodeB/eNodeB in a single enclosure.

Sahyadri Base Stations enabled by the new Agumbe Chipsets from Signalchip deliver high throughput providing industry leading performance in extremely compact form factors, which will allow operators to meet the huge growing densification demands as well as provide low cost coverage to rural regions, thus providing a common deployment platform that bridges the diverse rural-urban deployment requirements.

Sahyadri STRRU4415 O-RU features energy efficient high power 4x4 radio that performs all the functions from lower-PHY of gNodeB/ eNodeB's L1 layer to RF in a single compact enclosure. This helps the service providers to reduce the site space requirement and allow faster roll out while lowering the total cost of ownership. These can support carrier aggregation to maximize the cell throughput and capacity for an enhanced overall user-experience.

Sahyadri STRRU4415 is powered by the highly integrated 5G/4G RF transceiver chipset Agumbe SCRF4502 from Signalchip featuring high fidelity mixed-signal analog RF and integrated advanced signal processing functions such as DPD, CFR and QEC. The compact unit performs all functions of the lower PHY of L1 of the gNodeB/eNodeB solution. It connects to the DU over a 10G CPRI/eCPRI/ORAN 7.2x interface.

11. SPARSH

Sparsh - CCTV Factory for the World, Victory for Make in India

Sparsh is the epitome of **'Made in India'** Electronic security products over the last decade. Sparsh started their journey ~15 years ago with the vision of making India a destination for design and manufacturing of advanced security solutions. Due to its unrelenting focus on innovation and building design/manufacturing capabilities, Sparsh has revolutionized the security market by becoming India's first company to design and manufacture CCTV cameras in the country in 2008. It now counts several renowned brands as its prime customers, including several international and Indian brands. Sparsh has been instrumental in shifting the manufacturing base for several companies from China to India. Sparsh is now a leader in designing and manufacturing CCTV equipment in India with two manufacturing facilities in Haridwar and NOIDA.

The Company truly embodies a vision of **'building India'** and **'building in India'** with ~7% of its annual revenue directed towards R&D. With one of the largest in-house R&D centers for CCTV solutions and state-of-the-art manufacturing units and Testing facilities, building products to global standards, Sparsh has won many accolades and awards including the National MSME Award for Quality. Despite the pandemic, Company has achieved a CAGR of ~80% from 2019 to 2021.

Led by the 'Made in India' man of the Electronics Security Industry – Sanjeev Sehgal, this success has not been achieved overnight. The Company has faced many challenges in successfully imbedding the 'Make in India' policy, not just on paper, but in also in practice, while successfully maintaining price competitiveness with much larger foreign counterparts. Sparsh has achieved more than 80% Domestic Value addition for most of the products as on date and is committed towards achieve same for the complete range

With several government and private projects under its belt, the Company now aims to expand production in India to supply to South-East Asian markets and the West. Sparsh has set a solid benchmark of where India as a nation is headed – establishing economical and financial prominence on the global stage, through the success and scale of its national bred companies. As the Company targets to become the **CCTV factory for the World**, it marks a major victory for **'Make in India'** and a path for other national companies to tread.

BiaCat©

Wireless Solution Portfolio
SDR based architecture : Economies of Scale

LTE-R eNB / Network in a Box

Picocell (LTE-R) Indoor Coverage

5G Wireless Channel Recorder

MIMO Band 28 PA

About

With a unique proposition and positioning of the product and a scalable product roadmap, BigCat Wireless is positioned to offer solutions that address numerous uses cases and applications for private networks, Railways and other use cases.

BigCat Wireless Pvt Ltd

8th Floor, Block E, E806
IIT Madras Research Park
Kanagam Road, Taramani
Chennai - 600113
India
bigcat@bigcatwireless.com
http://www.bigcatwireless.com

13. CIENTRA

Cientra is a product engineering solutions company based out of Bangalore. Cientra caters to various technology companies in India and globally across industries such as Semiconductors, Telecom, Wireless, Automotive, Consumer, Aviation, etc. Our expertise is spread across VLSI, ASIC, LTE, 4G / 5G, IoT / NB-Iot, Wi-Fi, FPGA, SoC Engineering and IoT.

Cientra R&D division develop products in 5G, which include solution for 5G IOT convertor, 5G Core (under development), 5G testing tool, various semiconductor IPs including RISC V processor, V2X for automotive industry.

Our Mission is to give our customers the best value added & differentiated services, with a commitment to the highest quality of customer satisfaction, delivered with the sense of values, dignity, delight and company spirit.

Cientra Solution - Aadi – 5G IoT Gateway

A unique solution to transform conventional IoT to 5G IoT without 5G Radio

5G Network based on 3GPP standard Release 15, offers number of differentiated features over any current wireless standard like Authentication, registration, Security, Latency and Speed.

Suits well for wide range of industries as well as utility service providers such as :
1. Industrial / Factory Automation
2. Indian Railways
3. PowerGrid
4. Jalshakti
5. Housing & Urban Affairs
6. Mining

5G-IoT and 5G-IOT Gateway Demo with will exhibit the following:

- 5G Registration Compliance: SIM card based
    - Identification
    - Authentication
    - Authorization
- 5G Security: 5G Encryption and Integrity Protection
- Service Discovery & Authorization: NSSF service discovery and service allocation
- Slicing Network Discovery & Reservation, QoS:
- IOT M2M standard Interface
- IoT APP Server standard Interface
- Service Borrowing from other IOT/APP suppliers
- Interoperability and scalability – multi-Vendor connection support through 5G standard
- 5G standard services: Paging, Broadcast, reserved/On-demand QoS
- One Sim card and multiple-device support

With the above system we can build nationwide IOT network with 5G standard as shown below:

Aadi - IoT Integration with 5G Network
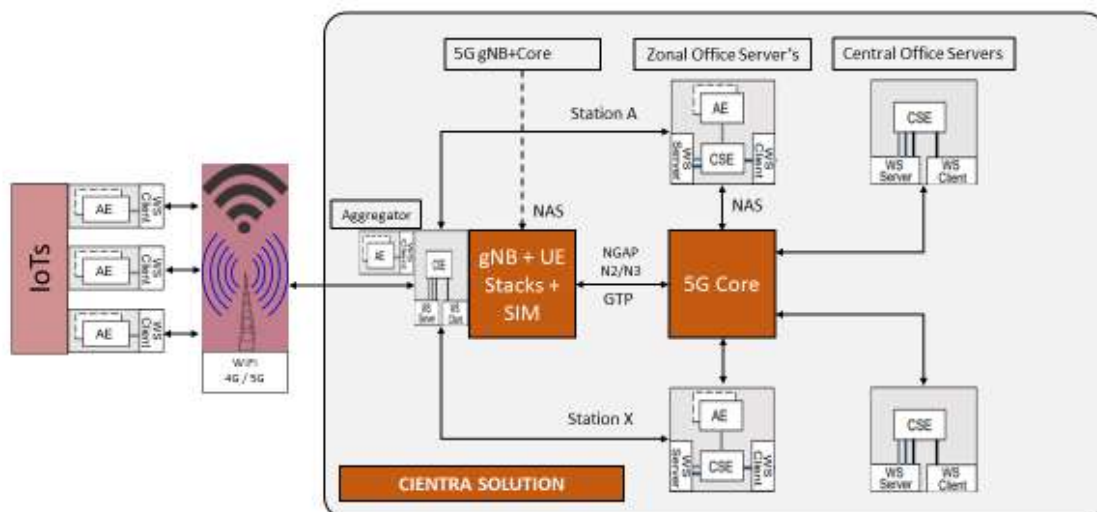
All the IoTs which are not 5G IoTs will be connecting to the Aggregator, which acts as oneM2M request aggregators and that connects with our IP-gNB through any IP connectivity. It can use 4G hotspot or WiFi to get IP connectivity. Gateway will host the redeploy able 5G Stacks and eSIM's to be allocated and deallocated dynamically to the connecting IoT's. IP-gNB will further connect the IoT's to the 5GCore which has the capability to reserve a slice of QoS guaranteed UPF network which will ensure data rate and quality to the ultimate destination of IoT Servers.

IoTs will get capabilities of 5G network for Registration, Authentication, 5G-Security, Slice allocation and high data rate and quality etc. Customer and operator can apply all the 5G monitoring and interfacing interoperability mechanisms to expand the network. Expendability with same standard had been a problem, which this product is solving. Also, existing, or non-5G IoT's can participate in the 5G network and avail 5G network features.

14. IDRBT

- The Institute for Development and Research in Banking Technology (IDRBT), Hyderabad established in 1996 by the Reserve Bank of India, is the premier Institute of Banking Technology in the country.
- The Institute spearheads efforts in providing state-of-the-art technologies for the Banking and Financial Sector by interfacing Applied Research and Development, Academics, Executive Education, Practice and Consultancy.
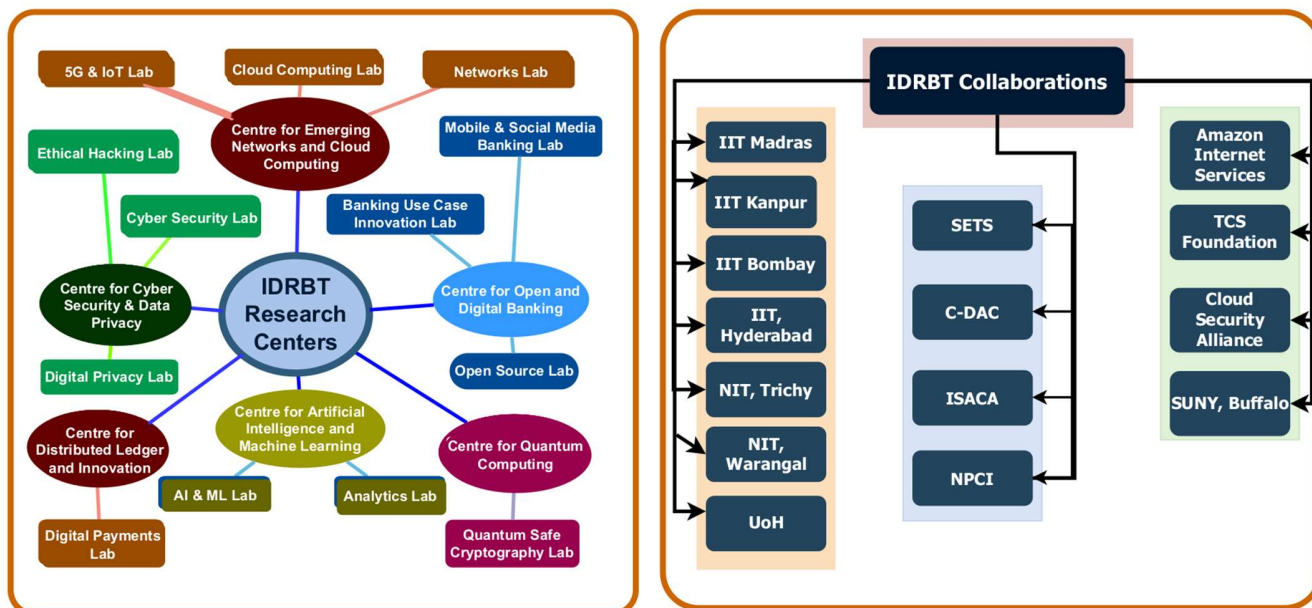
IDRBT FORUMS	ACADEMIC PROGRAMMES
- Chief Information Officers' Forum - Chief Information Security Officers' Forum - Chief Analytics Officers' Forum - FinTech Forum - Mobile Payment Forum of India (MPFI)	- Ph. D Programme (Awarded:37, In Progress: 24) - Post Graduate Diploma in Banking Technology - (PGDBT) - M. Tech. (IT) Programme - Certificate Course in Ethical Hacking - Executive Education Programmes

HIGH IMPACT RESEARCH

- Project on "Blockchain and Machine Learning Powered Unified Video KYC Framework"
- Project on "Developing Reverse Engineering Resilient Hardware Accelerators during Architectural Synthesis"
- Project on "Design and Development of a Unified Blockchain Framework for offering National Blockchain Service and creation of a Blockchain Ecosystem"
- Project on "Secure Offline m-Payment System using Certificateless Key Agreement Mechanism for Faster Access and Handover Authentication in Space Information Networks"
- Project on "5G Use Case Lab for Banking and Financial Services", set up by DoT and DFS, GoI
- Project on "Developing Data Science Framework, Architecture and Methodology for Fraud Detection in ATM Transactions in Banks"
- Report on Mobile Security Guidelines, MEITY, 2022, Chairman: Prof.V N Sastry

IDRBT 5G Use Cases Lab for Banking and Financial Services

- IDRBT 5G UCL FOR BFS is set up by DoT and DFS
- Phase-1 focus is on 5G Use Cases for Banks & Phase-2 for Financial Institutions
- Project Investigators: Dr.V.N.Sastry (PI), Dr. Abhishek Thakur (CI) & Dr. Subhrendu Chattopadhyay (CI)
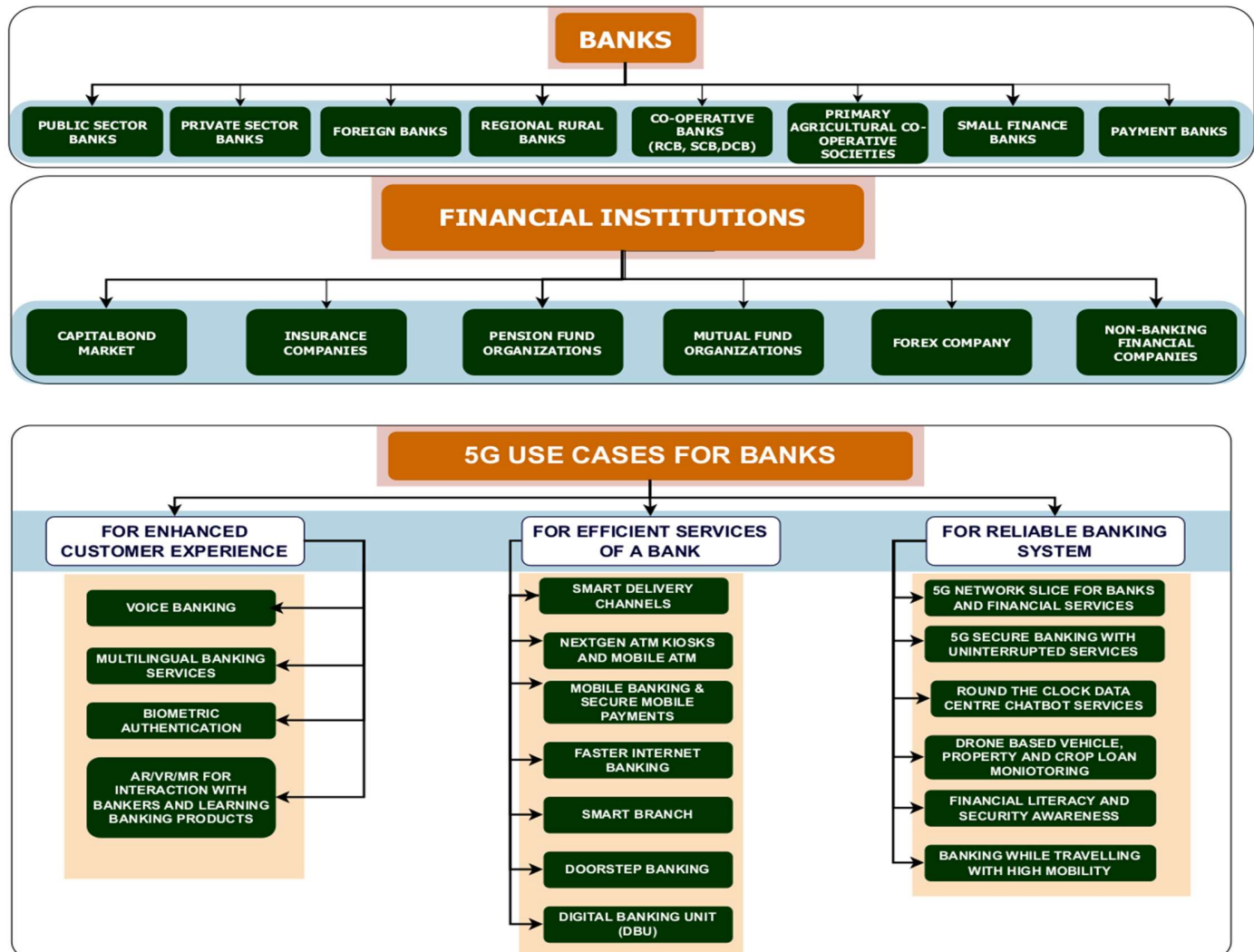
Demonstrations at IMC-2022

- 5G Open Air Interface: IDRBT
- LORA WAN for Rural Banking: IDRBT
- Voice Biometic Authentication : M/S Keizen Secure Voiz
- Voice Banking in Multiple Indian Languages with AI BoT : M/S Reverie
- Financial Literacy and Banking Technology Training using AR/VR : M/S Imaginate
- Virtual Bank with Avatars and Holograms : M/S Easiofy

Contact

Dr.V N Sastry, Professor, IDRBT, Castle Hills, Road No. 1, Masab Tank, Hyderabad – 500057, Telangana, India
Ph. +91- 40 2329 4999 Email: vnsastry@idrbt.ac.in https://www.idrbt.ac.in

15. INFINITY LABS

About Us:

Infinity Labs is a Technology Consulting & Software Solutions Company. Providing expert IT services in the areas of Automation, Network Design & Deployment, IT Security, Data Center Management, Cloud computing, Virtualization, Linux & Systems Development. We offer service which assures our clients of an informed, educated and independent overview of the IT Networking Industry.

We have indigenously developed our own firewall and SDWAN products. These software-based product provides flexibility that expands with your business to solve a growing array of networking and security challenges across cloud computing and mobility.

Our Vision:

Combine forward-thinking ICT strategies with world-class technologies and agile services to help customers and partners synergize for business success.

Our Products

Description: After several years of relative stability, the dynamic business landscape and uncompromising needs of applications and users have spurred tremendous development in IT Networking. Frequent technological advancements transform networking from static infrastructure to more flexible, secure, future-ready, and hybrid-cloud infrastructure. This resulted in unparalleled SDWAN as a Service technology management difficulty, which have become a rising corporate problem.

Early SD WAN networks providers were primarily concerned with lowering costs by replacing MPLS with low-cost broadband.

With an in-built NGFW, InfInxt Next Generation SD-WAN manages data and network security. Powered by Palo Alto Networks, SLA-based Application Performance Enhancement, Traffic Shaping, Multi/Hybrid Cloud App aware routing, and typical SDWAN Architecture is available.

Innovations:

· **Zero Touch Provisioning**: - You don't need to be a Tech geek to create a completely secured overlay network on existing internet. InfInxt Mobile APP based ZTP makes it possible just in a few clicks

· **Streaming Telemetry**: - Streaming Telemetry enables real time device monitoring and collection of KPIs like CPE Health, WAN, CPU, Memory utilization, Latency, Jitter etc. of network elements ensuring real time analytics.

· **WAN Cost Optimization**: - Infinxt Next Generation Secure Software Defined WAN is the technology to virtualize WAN transport and get operational cost efficiencies and faster go to market by replacing / aggregating traditional circuits with cost-effective Internet Broadband and LTE. The technology ensures better uptime using link redundancy fortified with Next Generation Security

· **Next Generation Firewall**: - Legacy firewall security solutions react to new threats. Intelligent network security stays ahead of attackers and improves business continuity.

· **Role Based Management**: - Infinxt provides its customers flexibility in management of Network operations and security through dedicated dashboards to NoC and SoC teams. User access rights to the controller would be clearly pre-defined as per their roles and responsibilities.

Product Image:

Description: Infiworx is a **Network Automation** service offering from Infinity Labs, which functions as single source of truth of network data to gain complete visibility and verify network's behaviour to avoid outages. It provides a 360-degree view of all the network elements present in the network.

Innovations:
- Network Discovery, Network Inventory (Physical & Logical)
- Network Topology, Network Planning Documents
- Integration & Deployment, ICM (Integrated Configuration Management)
- IOS Upgrade, Network Monitoring
- Audit & Compliance, Configuration Diff
- Operations, IPAM, Express Route
- Bandwidth Monitoring, Packet Capturing & Monitoring

Product Image:

Description: Infiwall is the next generation firewall providing L3/L4 Stateful security.

Innovations:

- Kernel based single pass firewall
- Packet inspection at kernel level
- Stateful protection
- NAT support
- Dynamic rules management
- Intrusion Detection
- IPSec Site-to-Site VPN
- DNS Blacklisting

Contact Details

Registered Office:

1. **Pune**
   Teerth- Technospace, Off No C-608 609 Level-6, Next to Mercedes Benz Showroom, Bangalore-Mumbai Highway, Baner, Pune – 411045
2. **Noida**
   Assotech Business Crestera, Unit no 1001 to 1008, 10th floor, Tower 1, Plot No. 22, Sector 135, Noida, UP

E-mail: sales@infinitylabs.in,

Contact No.: 9175943663

16. INNOGLE

INNOGLE®

AWARD WINNING VERY FIRST 5G DEPLOYER FOR DEEP OCEAN MISSION

A comprehensive solution with kadalcompass to have real-time two communication between vessels and shore, life safety, Doctors connect, tracking of ocean workers and tourist and the security solution which enable the navy and coast guard to track, identify and locate the ocean workers and tourist In Real-time in 20 sec and Auto alert the Vessel Owners to fasten the Life saving process even in Mid Sea .

This deep tech collect ocean bed carpet data using fishing vessels as USP this real time data use full for profitable Fishing, mineral mining, ocean cleantech and climate analytics.

CONNECTED DEVICES / SOLUTION:

1. Kadalcompass (5G, 4G, Lora & WiFi)
2. Life safety Watch for ocean workers and Tourist (Lora & Other)
3. Under water data mining and fishing device
4. SARROF – Search and rescue ocean floater
5. SAAGARONE – Ocean drone for rescue and security.

Thanking you : Shobana Uthayashankar (Founder & CEO), 9941 909070, Shobana.u@innogle.com, www.innogle.com
Video : https://www.youtube.com/watch?v=eZSGupsojzY

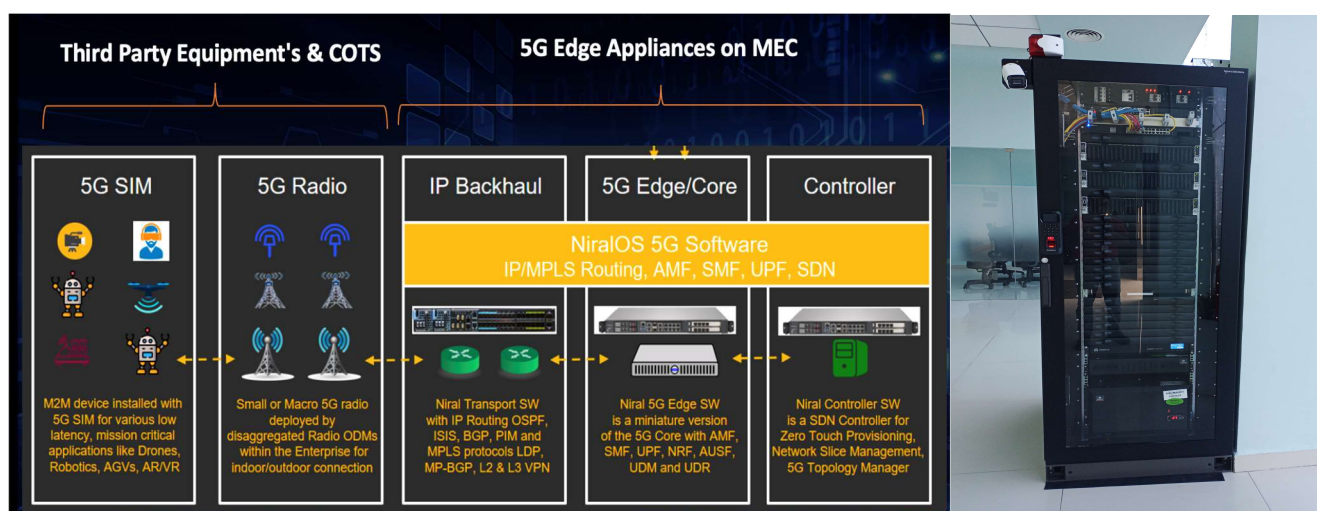# 17.NxtGen

NxtGen | **VoICE**
Infinite Datacenter

**Private 5G Edge for captive
setups: Data Center**

A key element of Industry 4.0 implementations, Edge Computing and 5G are providing the next generation of private wireless networks for our connected world enabling digital transformation.

For the power of AI, machine learning and automation to be leveraged by industry, mines, utilities and smart cities, they will need highly reliable and secure wireless connectivity and edge computing infrastructure. Private wireless provides a single network for all business-critical OT applications. It supports low-latency 5G device to device communications, low-power IoT sensor connectivity, mission-critical voice and video radio communications and legacy serial communications for SCADA and other control systems. Cutting-edge manufacturing sites, distribution centers and numerous other campus environments can benefit from the deployment of a private 5G infrastructure supporting various spectrums of 5G radio access networks. From algorithmic updates to a production processes, predictive maintenance of machinery and real-time interaction with autonomous distribution vehicles, private 5G networks offers numerous advantages for modern enterprises.

NxtGen a leading cloud and data center provider in India now offers dedicated Smart Edge for enabling end to end fully managed private 5G cloud to run 5G core software, SDN controllers / UDF workloads and connected COTS - 5G ORAN RU /BBU etc. The smart edge cloud is hosted on-premise as dedicated edge on pay per use model leveraging private 5G ecosystem delivering unmatched price performance value proposition for any govt and private enterprise.

Delivers value from intelligent 5G Private Network ecosystem running on distributed private edge cloud for enterprises offered together by NxtGen and 5G ecosystem partners

NxtGen aims to democratize private 5G as a service, Edge, and Cloud networking infrastructures by embracing a vendor-agnostic, open-source, web-scale, and disaggregated approach, leveraging 5GC - Network Operating System (NOS) integrated to ORAN 5G RU running on NxtGen Smart Edge. Its fully managed and hosted private 5G as a service subscription and its openness and flexibility can be a key enabler for customers in their digital transformation.

optimus rhino 5G

2023
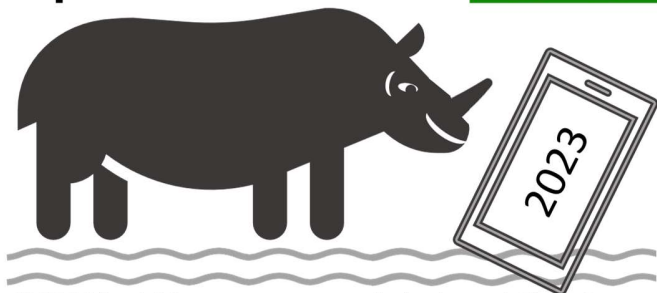
INDIA's 1st homegrown global mobile phone

- 🦏 **OptimusLogic**, India's 1st smartphone startup, is building **India's 1st global 5G Mobile**, "**optimus rhino 1**", in association with **IIT Hyderabad**, supported by **TCoE, DoT, Govt. of India** under DCIS-2022 scheme.

- 🦏 The "**optimus rhino 1**" is Made in India, Made for the World, Made for Everyone to create social convergence with 5G.

- 🦏 The "**optimus rhino 1**", will be followed by Tablets, Laptops and more, built on the new "Mukth" convergence platform co-developed by OptimusLogic & IIT Hyderabad.

the "optimus rhino 1"

- 🦏 Tough, Rugged, Reliable & Eco-friendly 5.5" inch Smartphone with stock Android 12, with support & upgrades for 3 years

- 🦏 Industry matching "regular" features for 5G, Calls, CPU, Memory, Camera, Music/Video, Navigation, Messaging, Apps etc.

- 🦏 Industry first 4G to 5G swappable upgrade support for savings, practicality & optimisation; upgrade only when necessary

- 🦏 Inbuilt "Ekalavya" Laptop mode for students & young minds to skill themselves for industry jobs and career opportunities

- 🦏 Learn, Code & Master skills across Software, Hardware, VLSI, Digital Design, Computer Architecture, Embedded

OPTIMUS RHINO 1 5G
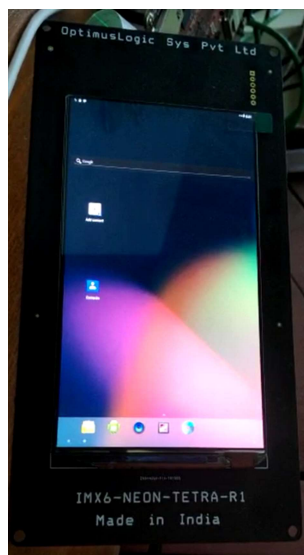
Proof-of-Concept: May 2022
5.5 inch Proto: October 2022
Design for Mfg: December 2022
Available for Sales: March 2023

ABOUT OPTIMUSLOGIC

OptimusLogic Systems, since **2013**, with operations in **Hyderabad** & **Bengaluru** in India, is now a growing global Original Device Manufacturer (**ODM**) and Independent Design House (**IDH**) in India, for Mobile & Wearable AI systems, Industrial IoT solutions, Signal Intelligence Radars and Ad-hoc Radios.

OptimusLogic is global design partner for **QuickLogic Corporation** since 2017, working on their low power sensor hubs for **Rugged Android Mobile customers in US & Japan.**

OptimusLogic contributes actively in the development of open source "Arnold" **RISC-V 22nm chipset** with eFPGA for edge compute.

OptimusLogic has R&D partnership with **IIT Hyderabad** since 2016 to tap into the latest academic research & talent across engineering and research disciplines.

OptimusLogic and **TiHAN-IIT Hyderabad** jointly develop solutions for autonomous navigation in aerial and terrestrial vehicles.

OptimusLogic is a proven R&D vendor-partner for **Indian Defence PSUs - Bharat Electronics Limited (BEL) & DRDO** since **2014,** contributing towards radars & radios.

OptimusLogic delivers solutions to companies like **Micron Technology** across fluidic partitions of software, hardware, VLSI & Apps.

Proud member VOICE

OPTIMUSLOGIC
India's Global Electronics Solutions Company
DEFEND • CONNECT • CONSERVE

OPTIMUSLOGIC SYSTEMS INDIA PRIVATE LIMITED
"Brindavan", 10, Yashodha Nagar, Jakkur, Yashodha Nagar Main Road, 37/4/10/6, Yelahanka, Bengaluru 560064, Karnataka INDIA.
+91-9606706202 | www.optimuslogic.in | vaman@optimuselectronics.com

Optimus Rhino 1 (राइनो) : 100% India Designed, Developed and Manufactured (IDDM) Mobile Phones and Accessories

optimus rhino 5G
INDIA's 1st homegrown global mobile phone

Proof-of-Concept: May 2022

5.5 in. Prototype: October 2022

Design for Mfg: December 2022

Available for Sales: March 2023

Operation Rhino is our 9-year dream and mission to design, build and launch indigenous electronic products globally from India. Optimus Rhino 1 seeks to be the 1st mobile phone towards this goal of aatmanirbharta with a sales target of 1Mu+ in 2023.

We want Rhino to be a global Indian brand for electronics and OptimusLogic to be known across the world as India's global electronics solutions company.

Our journey to build the 4G/5G Optimus Rhino 1 phone from scratch in India without active support from the global chip manufacturers is the greatest challenge to fulfil; And we are working hard to meet this challenge and launch the Optimus Rhino 1 in 2023.

Our journey to Rhino is built-on our extensive experience since 2013 in the following pillars of technology and revenue driven business:

1. **RF Communication since 2013** for Defence Radios and Radars for BEL and DRDO including field trials and our own Dory Adhoc ISM Band Radio for tactical comm.
2. **Android & Sensor Hubs since 2017** for Rugged Japanese phones from Concept to Production
3. **Turnkey Product Development since 2016** for Secure Storge, Connected Lighting, IoT, Wearables with Sports/Industrial AI and more
4. **Memory Technology** & Optimisation for memory leader company **since 2020**, for Mobile business unit
5. **Academic partnership with IIT Hyderabad since 2016**, for RF including 5G and radars and signal processing.
6. **Relations with ESDM companies across globe since 2016**, for fast and reliable manufacturing, sourcing and assembly.

Vaman (वामन): Affordable Skill Development across India in latest Semicondutor Technology using Mobile phone, to make true our Hon'ble PM's mission for India to become a hub for semiconductors for the world
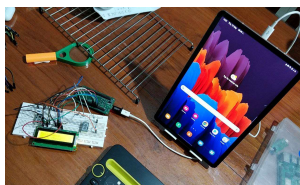
DORY Ad-hoc Mesh Radio
ISM 865-867 MHz

The **Vaman** ecosystem developed by OptimusLogic in association with IIT Hyderabad & TiHAN-IIT Hyderabad, has enabled affordable Open Source VLSI Development on Android Smartphones without need for a Laptop/PC to drive India's next semiconductor revolution in talent and chipsets.

The Vaman ecosystem consists of:

- The "Pygmy" FPGA+ARM+AI Made-in-India Module
- 100% Open-Source VLSI, Hardware, Software and AI/ML Tools chains supported on the Android Mobile phone

Anyone across our country, cutting across economic and social divides, now can learn, master, and build solutions to real-world problems with a hardware-software co-design thought process from prototypes to product. Please see https://youtu.be/bRrJqL3NGlg.

"Vaman" will have significant impact across the engineering curriculum and mindset, and contribute to the rising semiconductor ecosystem in India and the world.

Vaman / Pygmy is also used in commercial products for Sensor AI & security in mobile phones including Optimus Rhino, Wearables, UAVs/UGVs, 5G BTS and more.

Contact us today:

Chandrakumar Chettiar, Managing Director, CEO
+91-9866677117, ck@optimuselectronics.com

Someshwar MS, Director, Products & Systems
+91-6361691933, someshwar.ms@optimuselectronics.com

Krishnakumar A, Director, Software & Applications
+91-9731945533, krishnakumar.a@optimuslogic.in

19. ROSMERTA

ROSMERTA
Technologies

Rosmerta Technologies Ltd. is an Indian CMMI Dev 5 level multi ICTCompany, a leader in designing, manufacturing and system integration of state-of-the-art innovative, end-to-end technology solutions for automotive and transport domain. Rosmerta was incorporated in 2006 and is head-quartered at Gurugram, Haryana.

Rosmerta operates in several business verticals, viz., Intelligent Transport Management Systems (ITMS), High Security Registration plates (HSRP), Speed limiting devices (SLD), Smart Card based Driving License and Vehicle Registration solutions, Automated Inspection and Certification Centres (I&C), Automated Driving Test Tracks (ADT), Automotive Recycling, B2B & B2C digital platforms for vehicle registration services and multi-brand automotive services, catering to 3+ million new customers every month.

Rosmerta have its manufacturing unit in Guwahati, Assam which is certified for IATF 16949 to cater to Automotive OEM requirements. Rosmerta also have own in-house R & D team for developing end to end technology solutions including mechanical parts to PCB design to OS based or controller-based firmware development. The company also have an in-house CMMI Level 5 software development team which handles various project requirements involving use case specific backend software and web based and / or mobile based end user applications.

Rosmerta has always been a proactive contributor in various standard bodies, sharing the on-ground challenges in Indian conditions and suggesting improvisation in Global Standards to build globally comparable but localized India's own standards. Rosmerta is also an active participant in adoption of global **onem2m** standards in India for IoT (Internet of Things) &M2M (machine to machine).

Rosmerta Technologies has been in business of IoT based mobile asset tracking for more than a decade now. With it's own "Make in India" Automotive Telematics Devices and in-house software applications Rosmerta have been catering to various industry use cases such as, Intelligent Transport Management for State Transport Organisations, Route monitoring and pilferage detections for Mining industry, Petroleum industry and Food & Civil Supply Department, Emergency response solution for ambulance operators, Fare Meter integrated tracking and passenger emergency buttons for Auto and Taxi operators and transport departments.

We are proud to be the implementer of India's quite a few largest and unique Telematics deployment such as:

- ITMS project for Maharashtra State Road Transport Corporation (MSRTC) involving fitment of AIS-140 devices in 18,000 buses and PIS display boards in 650+ Bus shelters to display Expected Time of Arrival. Project also involves setting up of a Central Command and Control Room at MSRTC HQ.

- End to end trip monitoring solution for the state of Odisha to monitor 80,000+ mining trucks having heterogeneous vehicle tracking devices from various suppliers. The project is running for past 7 years including the complete backend system, 14 regional monitoring centres and a central command and control room.

- Advanced Telematics solution for petroleum tankers across India has also been implemented by us for clients like HPCL and IOCL. This implementationincludes voice alert system integrated Telematics devices and backend solution.

- End to end solution for emergency response ambulance vehicles for GVK EMRI, Indian Red Cross and National Health Mission. Around 3500 ambulances across Tamil Nadu was enabled with automotive tracking device & central monitoring stations.

- Monitoring Solutions for Food & Civil Supplies department where the fleet engaged in distribution of food grains through Public Distribution System under the governments food security act are monitored using IoT devices.

- Implementation is also in progress in India's Largest IRNSS integrated Taxi fare meter as per IS:16833 in Goa for estimated 18,000 tourist Cabs and the largest GPS integrated Auto Fare meter project for city of Chennai including 42,000 autos and backend solution including central command and control room at Transport Department HQ.

Rosmerta has its Pan India presence with 15 regional offices, 300 representative offices, more than 300 fulfilment centres and own dealer network in all State / UTs. We also cater to over 20,000 dealers of vehicle manufacturers on daily basis with our own in-house developed software for online ordering, inventory management, supply and warranty management, Rosmerta is uniquely positioned to cater to the end to end automotive IoT requirement of the country starting from field devices and multi-use case IoT application software.

20. SENSORISE

Sensorise - Enabling Innovation in IoT M2M Connectivity & Lifecycle Management

Sensorise is an industry leader in Internet of Things (IoT) and Machine to Machine (M2M) services in India, with expertise in supplying end-to-end solutions for improving Quality of Service (QoS), remote management and lifecycle management of embedded SIMs and IoT devices. As a registered M2M service provider with Department of Telecommunications (Govt. of India), it significantly bridges the gaps in infrastructure, technology, and services with diligent contribution to standards, policies & regulations to drive M2M adoption in India.

As pioneers of eSIM technology in India, Sensorise offers an enhanced portfolio of diversified products and services to support the various industries in their M2M and IoT requirements. Characterised by a unique proposition for multi-network remotely manageable connectivity, Sensorise offers exclusive QoSIM and SenseLCM products under IoT/ M2M services with real-time monitoring and data access for enhanced operational efficiencies, productivity and new business opportunities based on the data packed intelligence.

The innovations and in-depth technical expertise of the company offers a win-win position to the customers, offering end-to-end solutions with much wider and integrated technology capabilities for a future ready automobile scenario. The Quality of Service (QoS) provided by Sensorise ensures critical connectivity during network outages, meeting local connectivity requirements with multi-profile QoSIM (M2M SIM) supported by the in-built intelligence to automatically switch the network for seamless connectivity on the go.

QoSIM services offered by Sensorise is also provisioned for a remote subscription update, enabling quick and hassle-free download of any profile/ subscription on the same SIM over-the-air. This multi-network eSIM connectivity is powered by SenseLCM, which is a cloud-based connectivity lifecycle management platform offering user-friendly dashboard features for connectivity management, analytics, reports along with remote diagnostics for troubleshooting connectivity issues. The sensitive telematics data from sensors, control units and other components is secured by QoSec, which is a complete end-to-end security solution for data encryption. Sensorise has manages end-to-end solution for secure registration of connected devices/ applications and custodian verification as per digital KYC norms issued by government. SenseTouch platform manages eKYC services such as platform, app, data, screening, validation etc for facilitating hassle-free custodian verification for M2M connectivity.

Thus, Sensorise enables Intelligent connectivity vital to the GPS/ VLT device for transforming businesses by monitoring their high-value assets in real-time.

As the market leader with more than 1.5 million card base in various verticals, Sensorise is trusted by more than 100 OE/ OEMs for the QoSim, SenseLCM , SenseTouch services.

Sensorise solutions remove complexity from IoT implementations, allowing for rapid achievement of business outcomes with the proven Sensorise capabilities and customer centric approach fuelled with innovation and in-depth expertise for provisioning end-to-end services & solutions for the digital and IoT domain. As a trusted brand for Intelligent M2M connectivity and end-to-end IoT solutions by partners and customers across the various segments, Sensorise enables real-time data for effective monitoring and control by the widespread adoption and proliferation of affordable wireless communication, making the overall system much sustainable, profitable, and reliable.

For queries/ communication:

Mr. Manish Khare
Chief Operating Officer
Sensorise

Manish.khare@sensorise.net

21. FINAARA

![finaara - nextgen fintech solutions logo]

- LONG RANGE 5G PRIVATE NETWORK.
- NEXT GENERATION OF KYC
USING DIGITAL OR BIOMETRIC CHIP SET PASSPORT OR ID CARD READER.
- CASH RECYCLING FEATURES
REDUCE REFILLING IN RURAL AREAS.
- CASH DEPOSIT AND PAYOUT
USING SMART PAYOUT WITH AUTO-CENTERING TECHNOLOGY.
- CARD-LESS CASH
WITH HIGH QUALITY NON TOUCH AUTHENTICATION.
- MULTI-CURRENCY CASH DISPENSING AND DEPOSITING
TO ENABLE MONEY EXCHANGE.
- EFFICIENT COMMUNICATION AND SOFTWARE FEATURES.
- 3D ANATOMICAL AND FACE RECOGNITION SYSTEM
- DIFFERENT FEATURE OF MAIN BOARD
- ENABLING API OR EDGE COMPUTING FUNCTIONALITY

AVRM PRO

CROSS BORDER REMITTANCE AND MONEY EXCHANGE WITHOUT MIDDLE MAN FOR 164 MILLION USERS

finaara nextgen fintech solutions

vambx™
Vehicle For Automobile Banking and Money Exchange

A Banking counter & TWO ATM
With Money exchange, Remittance
Deposit & Dispensing Features

5G

A Full-fledge Rural & Remote Banking

THE TECHNOLOGY ENABLE TO BUILD FULLY LOADED RURAL BANKING VEHICLE WITH ADVANCE SECURITY FEATURES.

22. MENTHOSA

Menthosa Solutions:

❖ The Startup Menthosa Solutions is an outcome of continuous efforts to materialize research and development activities conducted at Telecommunications Research Laboratory, UIET, Panjab University, Chandigarh.

❖ Area of expertise varies from Rover Based and Drone-based development with customised solutions for specific use cases, augmented by AI & M2M algorithms.

❖ Backed by academic institutions and industries like Panjab University, TiHAN - IIT Hyderabad and Coral Telecom Limited, we are ready for the next growth phase.

❖ Team is capable of building customised solutions for Industry and has prepared prototypes of Drone as well as rovers as part of technology demonstration.
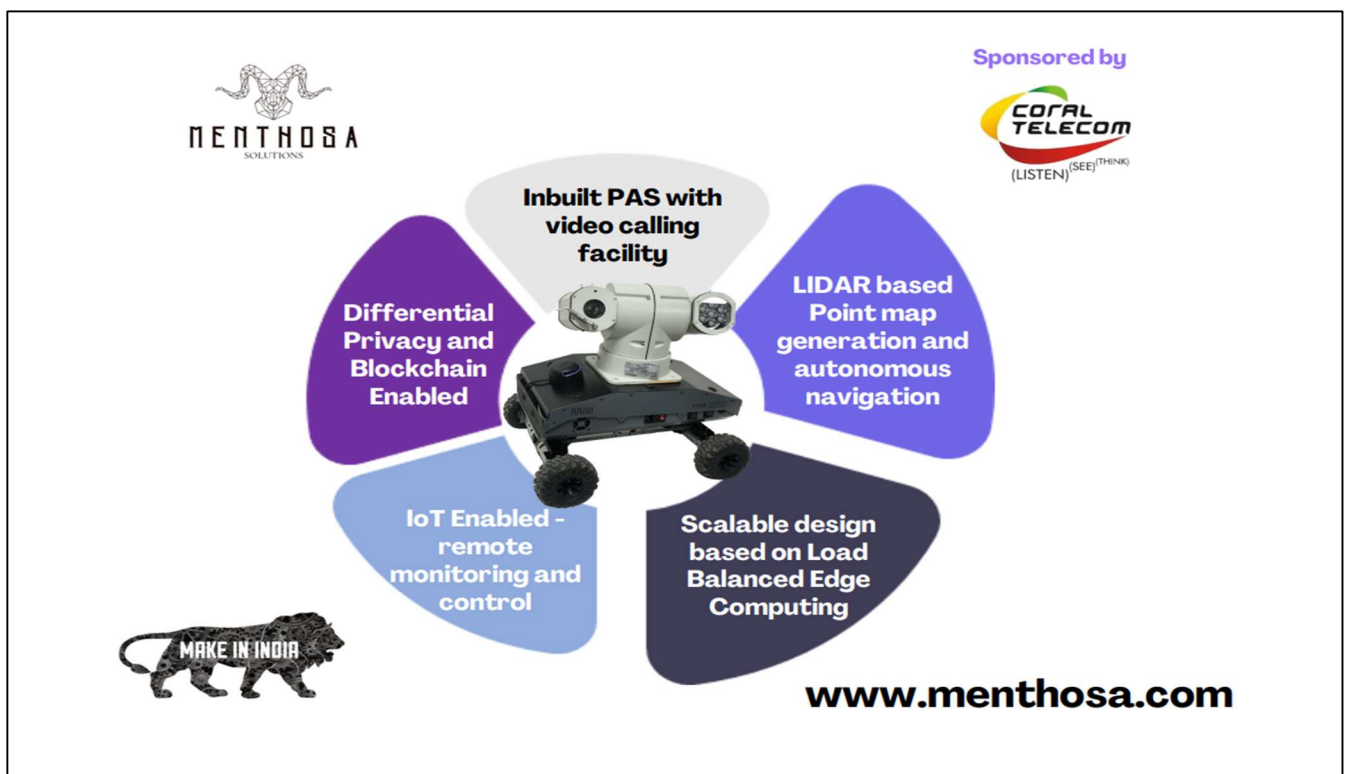
About Rover Aklavya:V1 :

❖ Autonomous Unmanned Ground Vehicle(UGV) is a rugged, "all-terrain" rover optimised for working on 5G with multiple sensors and camera systems for specialised applications.

❖ Equipped with a 360 degree Lidar it can generate map of an area in real-time and then, autonomously navigate in the map.

❖ Mounted on it's roof is a military grade Long range PTZ IR camera.

❖ Capable of generating alarms and make specific announcments to give instructions in hazardous environment.

❖ Algorithms optimised to support edge as well as fog computing to optimise based on user requirements and terrain.

❖ Security of data and communication can be further enhanced by use of blockchain enabled database as well as maintaining differential privacy algoriths.

23. NAVTECH

NAV WIRELESS TECHNOLOGIES PVT. LTD. (NavTech)

NAV WIRELESS TECHNOLOGIES PVT. LTD. (NavTech) is Ahmedabad, Gujarat, India based research driven technology company having main focus on LiFi Technology and Optical Wireless Communications Solutions and having multiple Patents on it.

Our Indigenously designed, developed and made In India Point to Point Optical Wireless Communication (OWC) LiFi / FSOC (Free Space Optical Communication) Solution complements the OFC by providing 1+ Gbps Optical Wireless Link, which can be very useful and effective in connecting Dark / Unconnected Gram Panchayats, Villages in remote Hilly Terrains and the forested regions, backhaul for 4G & 5G Infrastructure, last mile Enterprise Connectivity, Secure Wireless network links for Defence establishments.

OpticSpectra LiFi Optical Wireless Communications Solution

Made In India Point to Point Optical Wireless Communication (OWC) LiFi / FSOC (Free Space Optical Communication) Solution

Key Features & USP:

- Designed, Developed and **'Made In India'** 1+ Gbps & 10 Gbps Optical Wireless Secure Connectivity Link Solution

- An effective replacement for Optical Fiber Cable (OFC) wherever laying of the OFC is not easy or feasible due to Hilly / Mountainous terrains, Forests, Mining areas, Water bodies or rivers, Right of Way (RoW) issues etc. and connecting the islands with the main land.

- 1+ Gbps Optical Wireless **Backhaul for 5G / 4G Network Infrastructure**, Edge Networks, and Enterprise Connectivity, **BHARATNET Expansion** for connecting GPs/Villages

- Highly Secure Communication as Optical Communication cannot be intercepted

- Very Low Latency

- Low Power Consumption (less than 50 Watts), so can be used with Solar Power at Remote Locations

- World-wide License free Spectrum

- Maintenance Free

- Economical and **Rapid Installation** in comparison with OFC based network.

- Supports -40° C to +60° C Temperature, All Weather Solution

- Electro-magnetic Radiation Free Environment Friendly Communication Solution

Potential Use Cases for Optical Wireless Communication Link

- Could be a very good option having edge over RF / Microwave and Satellite backhaul links for 4G and 5G Network expansion and Point to Point connectivity in Remote areas.

- High Bandwidth Wireless Link for **Redundancy Purpose** for Critical OFC Network

- Connecting various offices / Infrastructure Points in **Mining Areas** as RF based Wireless Network suffers from Interferences from Mining Machinery Operations

- Connecting **Islands** with the Mainland, Optical Signal doesn't suffer from Signal Losses while Transmission over the saline water bodies

- Connecting various Jetties and other areas at **Sea Ports**

- Connecting the **Resorts, SEZs, Factories, Townships** at the Remote Locations with High Bandwidth Wireless Link

- In **Desert areas** where laying and maintaining the OFC Network is difficult and expensive

OpticSpetra Indoor & Outdoor Unit

Email Id: info@navtechno.in
Contact: +91 79-48421010
Office Address:
C-5, The First, Behind ITC Narmada,
Off, Judges Bunglow Road,
Ahmedabad - 380015,
Gujarat, India

Nav Wireless Technologies Pvt. Ltd.

Member of — GLOBAL LiFi CONGRESS — LCA — PATENTED — MADE IN INDIA — MSME — #startupindia — ISO 9001 — ISO 14001

MAKE IN INDIA

Vani Quantum Secure Communication Suite

Designed to provide end-to-end encryption based on Quantum Entropy developed by DRDO

Q-VID

Quantum Secure
Video Conferencing System

- Video Conference
- Chat
- File Transfer
  White Board

Q-SIM

Quantum Secure
Instant Messenger System

- Instant Messaging
- One-one & Group Chat
- Audio & Video Calls
- Multimedia
  Web version

Solution in a Box

- Self-contained, "On-premises Solution".
- Packed In a Ruggedized Transportable Box.
- Operates In Direct Plug and Play Mode.
- Location Agnostic, Low Maintenance and Is Simple to Operate.
- Provides Our Clients with Absolute Ownership of The Entire IT Infrastructure and Data While Enabling Trusted Communications, Enhanced with Quantum Security.

Also available on cloud

We Provide Solutions to Strengthen Personal,

USABILITY   PRIVACY   SECRECY   DATA SOVEREIGNTY

Contact for all queries:

RAKESH KUMAR BHATNAGAR

DIRECTOR GENERAL, VOICE

+91 9350836103

rkbhatnagar.dg.voice@gmail.com

Web : www.voiceofindiancomm.com

VOICE PARTNER

Contact for all queries:

RAKESH KUMAR BHATNAGAR

DIRECTOR GENERAL, VOICE

+91 9350836103

rkbhatnagar.dg.voice@gmail.com

Web : www.voiceofindiancomm.com